

digit

FastTrack

YOUR HANDY GUIDE TO EVERYDAY TECHNOLOGY

TO UBUNTU

Ubuntu
An introduction

Installing
Ubuntu

Getting around
Ubuntu

Installing
Software

What **Can**
you do?

Running
Services

Advanced
System tweaks

The Digit OS



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UBUNTU

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We suspect you would start using Ubuntu after reading it. Ubuntu is also known to be highly addictive. Read at your own risk.

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COVER DESIGN: BINESH SREEDHARAN

INTRODUCTION


In case you are unaware, or new to it, Ubuntu, just like Apple's Mac or Microsoft's Windows, is an operating system. Software installations do not require you to search for executable files, download them and so on. Everything just seems to work. You can perform all your regular tasks on it, and stay entertained too. We believe you would love to explore the possibilities of this lovely system. To mention its capabilities is short for this page, and so have we detailed things inside the FastTrack.

If you have never heard the name of 'Linux' or 'Ubuntu', we would be happy to say a few words about it: Linux is open source. So if you are a programmer and want to know how things work, you would be more than happy. In case you are not interested in code, let us tell you, there is no need either. You have a rich set of software available. From an excellent office suite which comes built-in to very potent 3D modelling software available online, it has got everything. You can have media players, a few games, different browsers, mail clients and what not. Just explore!

It is genuinely free. Yes, you read it right. You will have no black screens, no activation requests, no suggestions to pay for updates and no one coming after you asking for money or troubling you for copyrights. Its, just free; share it with friends!

It reduces your guilt feeling of using pirated software too! There is a whole lot more to be told but that would require many pages. We leave the exciting parts to be uncovered by you. For the sake of starting and guiding you into rather unknown waters, we present to you this handy little FastTrack. We hope it helps.

Oh, we forgot to mention: Ubuntu by default does not play MP3 and most popular Video formats. Worry not, we are providing you with a customized version of Ubuntu dubbed as 'Digit OS'. We have bundled VLC media player (along with GIMP and Chromium) to help you. Since

VLC plays anything and everything when it comes to media, we believe you are relaxed about the 'MP3' part. Although Firefox 4 is a fast browser, some would like to prefer Google Chrome. We have bundled 'Chromium Browser' (open source version of Google Chrome) into the Digit OS as well. With a hope that it helps, we present to you this small guide. 



UBUNTU?

WARNING: The following pages are infected with Ubuntu. We suspect you would start using Ubuntu after reading it. Ubuntu is also known to be highly addictive. Read at your own risk.



buntu is a Linux-based operating system with its origins in South Africa. Its name means “humanity towards others”. Back in 2004,

Linux was already established as a server operating system, but free software was not yet a part of everyday life. Further, Linux was thought of as a complicated operating system which non-technical people couldn't use. It was at this time in 2004 that Ubuntu began as a Linux distribution aimed at ease of use. Mark Shuttleworth, the creator of the project, gathered a few developers and went on to create the most popular Linux distribution till date.

An introduction to the Ubuntu project

The Ubuntu project is aimed at creating one of the easiest operating systems on the planet using Linux as its base. Ubuntu releases a new version every six months; the latest at the time of writing being 11.04. The next anticipated edition, 11.10, will be out in October 2011. We hope you've already understood the subsequent pattern of version numbers: 9.10, 10.04, 10.10, 11.04 and so on. Ubuntu places alongside these numbers names of animals to infuse life into each release. The 11.04 version is named as 'Natty Narwhal' (a medium-sized toothed whale).

Yet another unique fact about Ubuntu is that its owners (or you could just call them the creators) at the parent company Canonical have pledged

to always keep the OS free. On the other hand are companies who built over and around their open source products, especially Linux distributions such as Novell and Red Hat. They usually treat the free versions of their Linux distributions as a testing ground for commercial products. Canonical promises that Ubuntu is, and always will be, free of cost and open in nature. As far as its bank accounts are concerned, the OS is a volunteer-driven project and the company capitalises on its Ubuntu-related support and development services to enterprises. The commitment of Canonical and Mark Shuttleworth are to be credited for the ever-growing fame of Ubuntu.

Why is Ubuntu popular?

For those who're interested in computing, Linux is something which they take pride in being a user of, and love its freedom and flexibility.

Among all the Linux distributions, which already are extremely popular (use Google's free keyword tool to avail salvation for yourself), Ubuntu is the most popular. The reason for its triumph over all other Linux distributions is its ease of use. Before Ubuntu came into picture, Linux was thought of as a real tough nut to crack. Many had the (wrong) notion about Linux being a completely command line based operating system. While it is still true that an extremely rich set of useful applications, programs and features of Linux are dependent on command line (or call it the console), Linux certainly was much more than just a console-driven, type and press Enter styled operating system, even before Ubuntu was born. The one thing it lacked was the real ease of use offered by other operating systems such as Windows and Mac.

Ubuntu changed the scene with its innovative solutions to issues. It ensured that users could download new software easily. The OS was further popularised by the fact that it allowed you to use the system right from the CD and install it only once you felt pleased enough. The installer was simple and the looks were different and beautiful.

Ubuntu software updates were fuss-free even for the regular user to understand. One of its most innovative technical aspects was its self-upgrade feature. You didn't need to download a separate ISO file, burn it to a disk and then install or update from it. All you had to do was upgrade from within the OS. The required files would automatically be downloaded and installed. Version changed! Slowly, many other innovations came in: a music store (just like Apple), a software centre, integration of music

players and social service into gnome shell and what not. It's these little changes over time that increasingly increased the interest of new as well as already interested users.

The cherry on the topping was the awesome 'no drivers required' approach. Ubuntu made it easy for users to plug in their mobile phones, select their country, fill in a few details and get ready with a GPRS connection. This was, and still is, a huge boost for people (mostly students) who live in places where they can't afford to have wired connections or costly wireless plans.

For some users, the last mentioned feature (built-in drivers) is most important. Although you won't find Pentium 4 processors in the market anymore, some still use such machines just because it does all they want it to do. These users don't upgrade either due to monetary problems or because they're simply happy with the PC which taught them what a computer is. The bigger problem with owners of 'boxes' such as these is more on the side of support than features. If you lost the only copy of the driver CD of the motherboard for a P4 computer today, you will be forced to buy a new system. The reason is lack of support from the manufacturer. In all probabilities, manufacturers would have stopped supporting the device. So you wouldn't get the drivers on their web site, with little luck getting it elsewhere either. Since the Linux kernel has a huge database of drivers, Ubuntu gives you reason to rejoice. It brings life back to such old PCs. While system requirements of most other new operating systems for running are high, Ubuntu doesn't need much to get great performance from older machines. While 512 MB RAM might seem a little less for Windows 7 or Windows Vista, Ubuntu can not only be used on such systems but can also perform pretty decently.

In case that description suggests even in the slightest of ways that Ubuntu (or any other Linux distribution) is meant to run on slow devices, you might be enlightened to know that most supercomputers in the world today use Linux as their operating system. All these facts and features make Ubuntu more popular than any other Linux distribution.

Who can use Ubuntu?

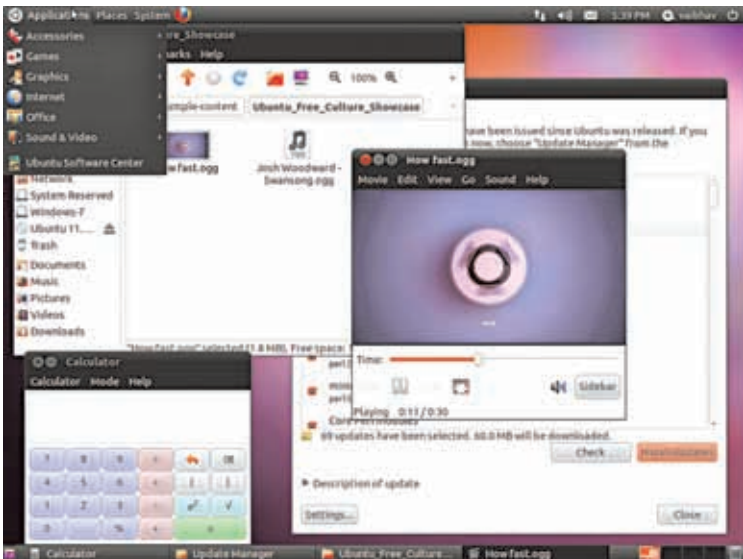
If you were to ask this question to the creators of Ubuntu, they would say 'anyone', and they wouldn't be wrong. Ubuntu comes with almost all software which you would require as a normal computer user. We know demands differ, so let's look at the valley from different mountains:

Home user

The term 'home user' would almost automatically ask your creative side to form an image of a person who enjoys using a computer for entertainment and a few not-so-important tasks. That would include music for passing the boring Sunday evening, a few movies to make yourself smile, email to keep you posted, web browsing to stay updated, a messaging client to chitchat with friends and probably a spreadsheet to help keep expenses in limit.

Ubuntu comes with all of this. It's got 'Banshee' to play your music, the 'totem' video player to play the movies, 'Evolution' to manage your calendar, contacts and email, Firefox to browse the mighty online mess (although beautiful and organised, the web is a mess after all!), 'Empathy' for chatting with friends on Yahoo, Google Talk and others and 'LibreOffice' for your office needs.

We believe that is what a home user would want from his / her computer. However, in case an Ubuntu aficionado wants more, installing software on this OS is a piece of cake (more about it later).



Your toolbox: Ubuntu comes installed with almost every software a home user needs

Office user

The typical office user fills data into spreadsheets, creating presentations to be shown to clients and/or typing in a leave letter. Despite the change in definition of offices or its users, almost all software manufacturers (including Microsoft) continue to consider “office applications” as a set of software used for creating documents, presentations, spreadsheets and small database applications.

Ubuntu comes with an office suite named LibreOffice (Libre means open) which is similar to and compatible with the Microsoft Office range of applications. In addition to the document, spreadsheet, and presentation application, it also comprises two other programs named ‘Draw’ and ‘Math’ which can be used to create illustrative drawings and complex formulas for office purposes. Math is unique to LibreOffice because it is a full fledged formula editor. You couldn’t ask for more.

Who can’t use Ubuntu?

This is one question which depends heavily on the needs. If you’re a hardcore gamer, Ubuntu probably isn’t for you. If you want to blame it on Linux, we suggest you change your mind. While there are games made for Ubuntu, the most popular games (we believe your brain is running a pronunciation simulation for spellings like ‘Crysis’, ‘Need for Speed’, etc.) were never meant to be run on Linux platforms. Although ‘Wine’ and ‘PlayOnLinux’ exist, a clean run can’t be promised, not by us at least.

The reasons for Ubuntu not having major game releases are much more social than technical. The first reason would be that Linux developers and users have traditionally been geeks (until the recent changes) and gaming was never on their list. So Linux didn’t receive much attention from the game developers. The second reason could very well be the mental set-up of game manufacturers: only those who can pay for software would pay for games. Since Linux is free, the platform never was considered good for hardcore gaming. Yet another point in favour for Windows can be the availability of DirectX APIs on Microsoft platforms as they make life easier for game developers. There, however, are some fine 2D and a few nice 3D games for Ubuntu. Oh, and it does have board and card games like Chess, Sudoku and (the all-time favourite) Solitaire.

You might also not like Ubuntu if you are a designer. Most desktop design and publishing software are not available for Linux. So if you’ve produced all your great graphics using Adobe’s Photoshop software, you



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won't be able to open those beautiful projects inside GIMP as they don't get along well. Animators and movie creators may also dislike Ubuntu for not supporting their Windows software.

Ubuntu, however, has some very good applications for all these tasks. Audacity, Blender, dia, Inkscape, GIMP, Pinta and VideoLAN Movie Creator are a few names you might want to keep in mind. But as we said earlier, the reasons for not using Ubuntu (or any other Linux system) are more social than technical. Different file formats, different software packages, different features, interfaces and a lot other similar problems and issues stand between you and Ubuntu. If you're ready to restart your life in a free world, Ubuntu, we remind you, means humanity. It will warmly welcome you into a fresh new world.

If a summary of who can't use Ubuntu is expected, we'd encapsulate it in one sentence: Anyone whose previous life has been on influenced by closed source software so much that he can't survive without it, might not be able to use Ubuntu. At the same time, it's our duty to remind you of two great terms: Wine and Virtualization. 



**Find a sachet of
Ching's Secret Schezwan
Miracle Masala free inside.
The Foolproof way to tasty,
healthy fried rice in under
5 minutes**

CHAPTER #2



INSTALLING UBUNTU

Kindly fasten your seat belts. We will take off shortly.



o use any operating system, you don't have to necessarily install it – at least with Ubuntu! Ubuntu can be used directly from a USB

drive or a DVD. Just boot the computer with the media and you'll find a usable desktop right away. However, a lot of functionality in the 'live' mode is limited by the transfer speeds and space available on the USB drive. You can't store all the software on a USB stick. In case you're using a DVD or a CD as boot media, you're in a much restricted environment and won't be able to install new software. So although installation is not a requirement, it is certainly recommended as a method to enjoy your freedom to the fullest.

If you've got this far and are reading this very sentence, we believe you're already in a mood to pop in a Ubuntu disk and fire an installation. So let's get started. We'll show you the installation procedure for Ubuntu under different conditions.

Installing Ubuntu as a standalone OS

If you want to use Windows on your PC, you'll have to install it before Ubuntu. If you install Windows after Ubuntu, it will erase the bootloader created by Ubuntu. Although Ubuntu would still remain installed, it simply wouldn't be bootable! Windows doesn't add Ubuntu to its boot menu if it finds the Linux OS on the disk while being installed. Ubuntu, on the other

hand acknowledges and respects the existence of Windows on a machine and adds it to its boot menu.

To install Ubuntu on a machine without any operating systems, follow the regular procedure: insert the boot media (CD/DVD/USB drive) and boot the computer with it. You'll eventually arrive at the Ubuntu desktop, which, as we've already said, is very much usable as a complete system in itself. Before beginning the installation, take a backup, so that our installation is beneficial and not harmful to us. On the desktop you'll find a shortcut to the installer (it's called ubiquity). Simply double-click it and the installer will pop up asking questions (we'll call them steps to install Ubuntu):

Step 1: Choose your language. Since you're reading this, we assume you'd choose 'English' on that screen and press the 'Forward' button.

Step 2: On the next screen, ubiquity will recommend system requirements and tell you whether your system meets them all or not. It basically shows you the following requirements:

- ▶ 4.4 GB disk space – This is perhaps the only stringent requirement by Ubuntu. You should make sure that your hard disk has at least that much space. Of course the bigger, the better.
- ▶ Is connected to power source – This is not a very hardcore requirement. All Ubuntu wants to say here is: "please ensure power supply is not turned off when installing".
- ▶ Is connected to internet – Although this too is not a necessity, Ubuntu could use your internet connection to download updates and extra media codecs (both are options provided on the same screen) over the internet. This will ensure that your OS is brand new and updated when installation finally finishes.

Just make sure that Ubuntu is ready to be installed and press the 'Forward' button again to go to next step.

Step 3: In the next step, ubiquity will offer you two options: "Erase entire disk and install Ubuntu" and "Something else". Unless you have files which you'd like to have on disk, go with the first option. It tells Ubuntu to utilise the complete disk space and decide what's best for your system. Ubuntu will create its own root (/) partition, a swap partition and install itself on the '/' partition.



Ready to get started: Make sure Ubuntu is happy to be installed

If, however you have something to save, choose the ‘Something else’ option and that would get you to a simple-but-powerful partition editor where you can choose the disk you want to partition (in case you have more than one) and then create or edit partitions on it. We’ve discussed more about this in the “Installation steps for a dual-boot setup” section where it’s more relevant.

That’s simple. Now click the obvious Forward button again. You’ll be asked to confirm the settings once more. Then click on the ‘Install now’ button. Installer will disable its controls for some time while it formats the partitions for installation and then returns asking you another question.

Step 4: Installation at this point of time would already be running. While installation is still in progress, Ubuntu will ask you to enter information required after installation. This includes your time zone and country.

Step 5: Select your keyboard layout. If you’re unsure, you can click the ‘Detect keyboard layout’ button and that would help you select the right one. In almost all cases it’s the USA keyboard layout which we use. Click ‘Forward’ (again).

Step 6: Enter your real name, your username (Ubuntu will automatically make your first name your username, though you can change it), computer's name (useful for a networked setup) and password for the user. Ubuntu will warn you if you choose a weak password. You can still use it. However, it's always good to have a stronger password (more than 8 characters, mixed case, special characters and digits included). You may also choose to automatically log in when the computer starts. Remember the password you enter here. Ubuntu will not offer you the luxury of forgetting it nor will it offer you a 'forgot password' option. Although you can reset your Linux password later by following the trick published in the April 2011 issue of *Digit*, it's always good to remember your password.

Step 7: If you're connected to the internet, it will download the package list so that you're ready to install new software as and when you reboot. If you want, you can stop this process by clicking the 'Skip' button which reveals when you click on the line showing the current status. Oh, and if you'd allow Ubuntu to get the latest list of software, it will (proudly) show you a slideshow of its best features (reminds you of something called 'XP', huh?) by the time.

Step 8: There is no step 8. Ubuntu is installed. Just restart the system!

Step 9: Once again, there is no step 9. Ubuntu won't ask you for any more details after the reboot. Enjoy Ubuntu!

Installing as a dual-boot setup

Man is made of habits. We simply don't want to let go of the old so easily. If you're already using Windows, chances are high that you won't take a plunging leap by removing it and installing Ubuntu on your machine. You want to have the best of both worlds and will finally shift to Ubuntu only when you're satisfied that it will fit your needs. Till that day you'd use Windows and try out Ubuntu only for a change.

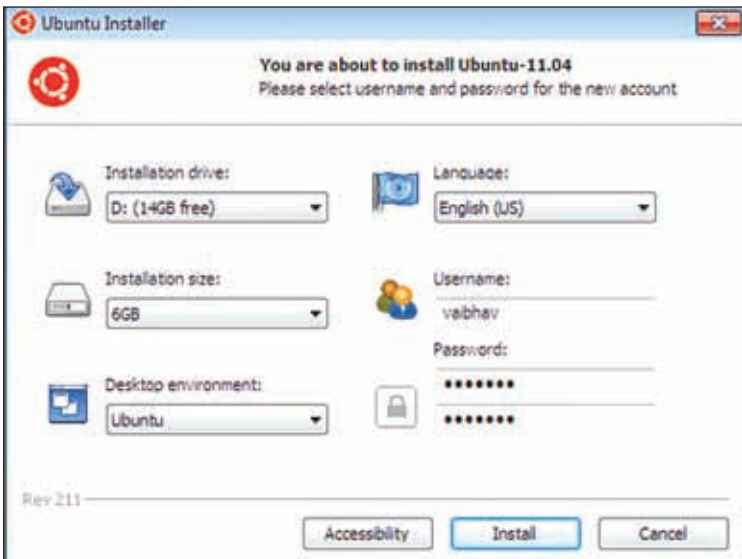
Any operating system requires a separate partition to be installed. This is the case because it might need files with the same name and path, and also because file systems might vary for different operating systems. While Ubuntu can read and write on Windows file systems (FAT32 / NTFS), it can't be installed on partitions formatted with any one of them. It's important that Ubuntu receives its own partition.

To partition or not to partition?

There's something unique about Ubuntu. While it's mandatory for any OS to have its own separate installation partition, Ubuntu can be installed as an application over Windows. Thanks to the brilliant Wubi and sister teams at Ubuntu who worked hard to create Wubi, the Windows installer for Ubuntu. With Wubi, you can install Ubuntu onto the current Windows installation just as another software application. It will bring Ubuntu into the Windows OS selection menu and you can boot into Ubuntu right from there. Easy and intuitive, isn't it?

However, there are a few problems with such a Wubi installation, which you should be aware of. Ubuntu installed via Wubi:

- ▶ Doesn't start if Windows didn't shut down properly or if its installation volume wasn't clean upon a system reboot.
- ▶ Will suffer disk performance, more so when the installation file gets fragmented.
- ▶ Put you at the risk of a broken installation thanks to updates and corrupting the Windows bootloader at times (this is the most dangerous one).



Ubuntu with Windows: Installing Ubuntu alongside Windows using Wubi is a piece of cake

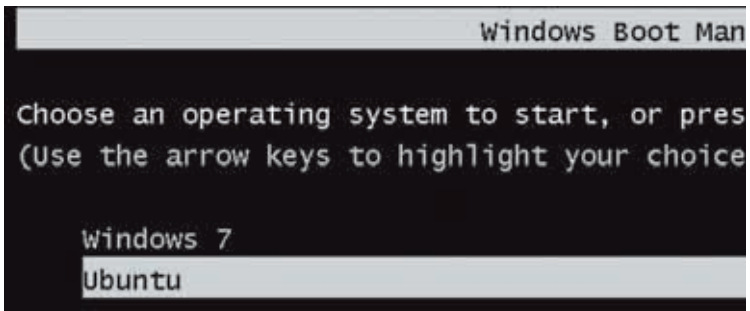
- ▶ Prevents you from hibernating your machine.

Apart from these small problems, installing Ubuntu using Wubi is great as it allows you to test it on your real machine without problems and also allows you to remove it just like any other program. No hassles of partitioning, resetting the bootloaders etc. In case you want to remove Ubuntu some days later, just head to the control panel and uninstall Ubuntu. Now that's what we call 'easy'.

However, if you don't want to face the problems mentioned above and still want to utilize and enjoy the experience Ubuntu promises you, partitioning is required. Don't fear, however, because it's not very difficult to do so. All you have to know are a few basic facts about Linux partitions.

What partitions to make

Before we get into details, let's talk about the partitions required first. Linux, unlike Windows, can utilise more than one partition to spread its contents and load. Although this is not mandatory, it allows you to extract better performance from the machine. The absolute requirement is the root partition which is denoted by '/' character. All files on any other partition are



Menu selection: Ubuntu installed with Wubi will appear on Windows boot menu

made to reside within this partition alone. While Windows can allow you to have more than one 'drive', Linux will give you the same functionality by putting the contents of a partition in different folders used as 'mount points' for those partitions (or volumes).

Aside from the / partition, Linux will also strongly recommend creating a swap partition which does the same work as that done by the Windows' pagefile.sys on C: drive. It allows the OS to run programs whose memory

requirements exceed the available amount of RAM. While there's a way to use the Windows method (use a file instead of a partition for paging), it is recommended to use a separate partition for the swap. It's possible to make other partitions like /var (for storing files which change frequently) , /boot (boot files like kernel, ramdisk image, boot menu files etc), /usr (for installing most programs; it's similar to the program files folder for Windows) and any other to make the Windows partitions (NTFS partitions) available under Linux. However they're neither mandatory nor strongly recommended. We'll show you the Ubuntu installation alongside Windows (using Windows 7 as example) with creation of a root (/) partition and a swap partition.

Installation steps for a dual boot setup

So first insert the installation media into the computer and boot from it. Further steps are as mentioned below. Please note that the only difference between the steps that follow from those mentioned in the "Installing Ubuntu on a Machine with No OS" are those which are related to partitioning. We won't repeat them here in detail but only refer to the previous ones (with a brief inline description of the step).

Step 1: Choose your language. This step is the same as Step 1 of procedure for Ubuntu installation without an OS.

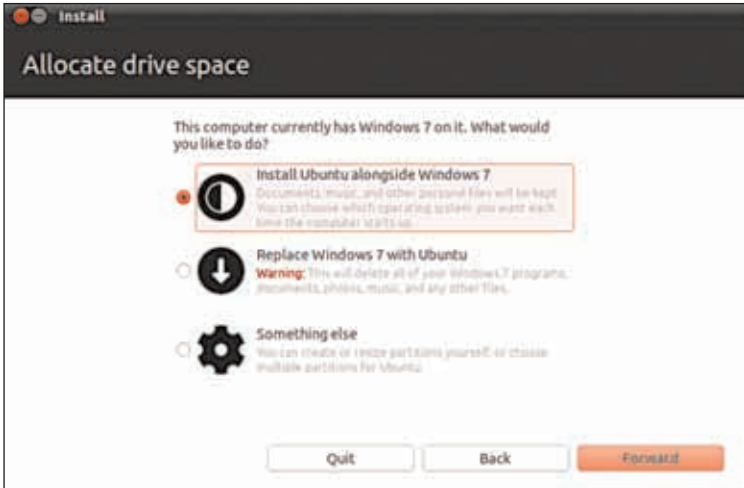
Step 2: Make sure you meet the system requirements for installation and click 'Forward'. Refer to Step 2 of "Installing Ubuntu as a standalone OS" for details.

Step 3: In this step, Ubuntu will ask you how you want to install Ubuntu. It shows you three options:

- ▶ **Install Ubuntu alongside Windows 7:** This is the most suitable option for us. When you select this option, Ubuntu looks into each partition, sees how much drive space is available and selects one which suits the best. Upon selecting it and pressing 'Forward', you'll be allowed to set the amount of space you want to allocate for Ubuntu on the selected drive; usually it's the one with most amount of space available.

The screen which offers you to allot the space to Ubuntu by resizing the selected partition, will also provide a link to the advanced partitioning tool. It's the same screen that appears when you select the 'Something else' option.

- Replace Windows 7 with Ubuntu: We don't want this. This will remove the contents of the Windows 7 partition. This may contain all your music, pictures, documents and videos kept in the default folders and



Check your drive space: You can choose what to do with Windows 7 in a simple way



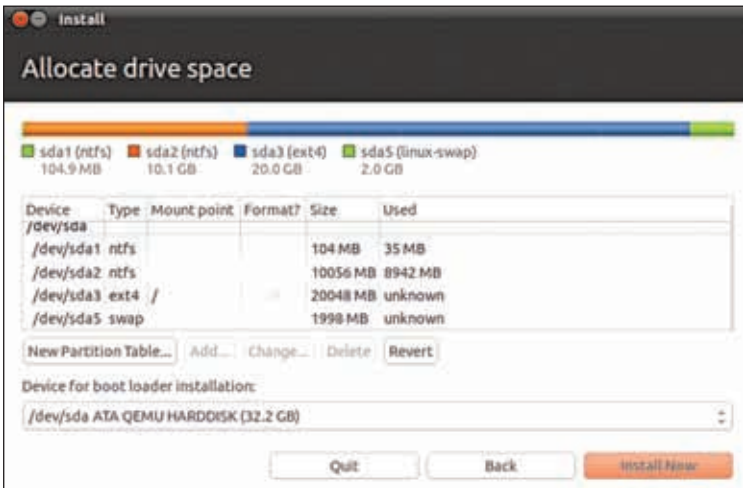
Dual boot configurations: Resizing partitions for installing Linux alongside Windows can't get any easier

Windows programs, along with the OS itself. Do this only if you really want to remove Windows.

- ▶ Something else: This option will take you to the advanced partitioning tool. Using this tool, you can delete, resize and create new partitions. It's recommended (only) for advanced users who want more control over how much space is to be allocated to each Linux volume, file systems to be used and so on.

To use this option, you must be knowledgeable enough to understand the limitations of hard disk structures and file systems. Here are a few questions to help you determine whether you should be using this option or not:

- ▶ Do you know that most computers use a partitioning style called MBR?
- ▶ Did you know that the sum of number of primary and extended partitions can't exceed 4?



Managing your partitions: More Control for those who demand it –
Ubuntu partition editor

- ▶ Did you know that a new install requires a new partition and that primary partitions are more preferred for the /boot partition?
- ▶ Did you know that resizing a NTFS partition can take a lot of time?
- ▶ Do you understand the differences between the primary, extended and logical partitions?

If answers of all the questions above is ‘yes’, you might be a suitable candidate for using the advanced partitioning tool. If, however, any answer is a ‘no’, we suggest you allow Ubuntu to take a wiser decision by selecting “Install Ubuntu alongside Windows 7”. Unless you’re in a mood to experiment with partitioning and understand the fact that a failed experiment might result in total loss of data with an unbootable fate, you should select the first option and let Ubuntu take decisions on its own. Even if all the answers for the questions above are ‘yes’ but you still get stuck at some error or message shown by Ubuntu during partitioning, you should select the first option (Install Ubuntu alongside Windows 7) to let Ubuntu decide the best option.

If you’re about to make the partitions yourself, do make sure that you allot about 1.5 to 3.0 times the installed RAM as swap area. Although lesser can also be used, allocating the swap area based on this calculation promises better performance.

Upon selection of the right choice and creating partitions, click on ‘Install now’ and installation will start straight away.

The rest of the steps are the same as for “Installing Ubuntu on a Machine with No OS”. We mention them here for an easy reference.

Step 4: Choose your timezone and click ‘Forward’.

Step 5: Select your keyboard layout.

Step 6: Enter your name, a username, password, machine name and choose autologin options.

Step 7: Wait while Ubuntu downloads the package list or skip the step and reboot the system after installation completes.

Upon following these steps, you’ll be able to boot into the Windows or Ubuntu by selecting one from the boot menu.

Staying safe during installation

In case you want to install Windows and Ubuntu from scratch, it’s best to clean the disk space by removing everything (back up to external disks or USB / DVD drives) and doing away with all partitions first. Then, create only one partition when installing Windows. This will allow you to have two more primary partitions later (Windows 7 setup creates and utilises

two of them) – of which one can be used for the root (/) partition and the rest of the space can be further divided to create more partitions. Of this, one can be the Linux swap partition and the rest can be used as desired.

Complications to beware of during installs

If you followed the steps carefully and righteously, there shouldn't be any problems. There, however, are a few nuts and bolts which may be out of place to make your day a nightmare. It's always good to be aware of those before starting off the installation. After all, devils don't warn before striking.

- ▶ Partitioning problems: We focus once again on this for this is the most vulnerable point for making a mistake, specially for a person new to Linux.

The solution here is to allow Ubuntu to take the partitioning decisions if you don't understand something.

- ▶ Boot loader installation problems: If the boot loader is corrupted, be sure that your system is under a high probability of 'never booting again'. You might have to take a highly complicated way to restore bootloader using either your Windows or Linux recovery disks.

The solution here is to check the CD / DVD for defects before starting the install. Also do check the MD5 or SHA checksums for the ISO images before burning.

- ▶ Broken packages: If a package is broken, your system is going to be as well. Once again, if you have asked Ubuntu to download updates while installing and some packages are downloaded broken, you would face one problem or the other. Although Ubuntu makes sure that this doesn't happen, it always pays to be on the safer side.

The solution in this case is to make sure that you have checked the CD / DVD for defects beforehand. If you plan to update the system, we recommend you do it after installation. This saves on the installation time. Since more things can go wrong during installation than later, it's best to update later.

- ▶ Power supply: This is something we all understand the criticality of. Do make sure that power doesn't get interrupted while you're installing the system. The worst case here is a power failure when bootloader is being installed.

The solution is simple – get a power supply backup (such as UPS) and make sure it lasts long enough.

Post install: Finding missing drivers


There is hardly anything you need to be worried about if you're using Ubuntu. It takes care of almost everything. In case there are any devices on the system which need any extra third-party drivers, Ubuntu will automatically search for them and alert you with a notification at the top-right corner. You'll be able to download and install the drivers from within the system.

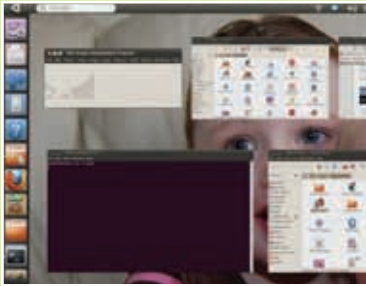
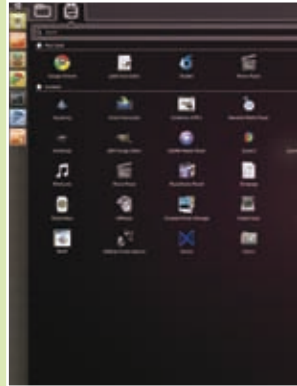
In case you want to install drivers for your graphics card, that too is automated. The driver information is fetched from the internet and installed on user request. However, in case you want a detailed guide for the exact manual procedure, you might like to head to:

ATI: <https://help.ubuntu.com/community/BinaryDriverHowto/ATI>

NVIDIA: <https://help.ubuntu.com/community/NvidiaManual>

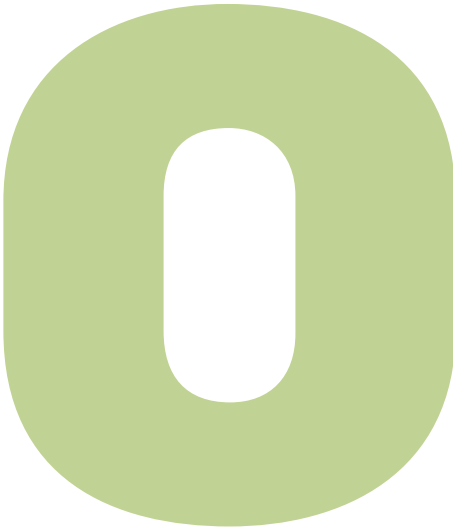
Remember, however, that Nvidia doesn't recommend this method and suggests that you download the drivers from its site and install them manually. This is usually because of the fact that new releases of drivers are usually not readily available on Ubuntu repositories.

On another note, since you'll not be playing hardcore 3D games on Linux, the drivers available at Ubuntu repos are fine to go with. It has to be kept in mind that installing drivers manually is meant for advanced users who understand the concepts of runlevels and graphical systems on Linux. We believe that one can progress to that point soon but until then new users are adviced to follow what Ubuntu says. If you're not much in need of 3D effects or if the desktop effects work on your system without installing additional drivers, leave things as they are. If you mistake a step, things can go off-track to an extent that it might cost a complete reinstall. 



GETTING AROUND UBUNTU

What you can expect in the most popular distribution of desktop Linux.



ne of the prime reasons for fear of Linux in the hearts of new users is the look and feel of an operating system.

Although Ubuntu has been using Gnome as its environment every since its inception, the new version, Natty Narwhal has brought something new to the table – Unity. Unity is an interface which was used in the ‘netbook’ edition by the Ubuntu team before they thought of making it simpler. When they did, they integrated both, Gnome and Unity interfaces into one distribution which could be used on Desktop PC’s & Laptops as well as Netbooks and other smaller screen devices.

The new Unity look

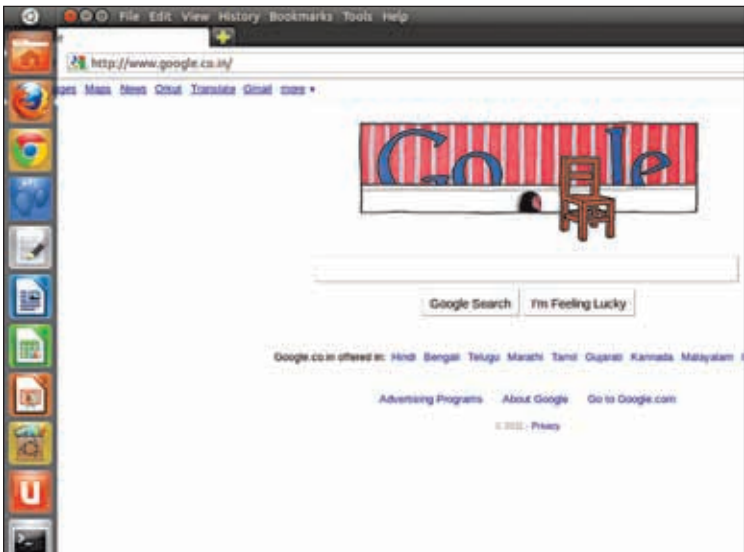
Unity was designed by the Ubuntu team to make Ubuntu easier than it already was. While some say that it doesn’t make it easy but even more difficult, others who love it term the difficulty to be a learning curve. When looking from a neutral point of view, we find it has both, good and bad impacts on the system.

The Gnome interface has (or had) two panels – one at the top and another at the bottom, with the bottom working as the taskbar and the top panel containing system menus, toolbar icons, quick launch buttons and in case of Ubuntu, a power button which could be used to control the shutdown,

sleep and restart functions of the system. Unity, on other hand, took a bold step to remove the bottom panel and added another bar on the left, which is like something between Mac OS X dock and the taskbar of Windows 7.

The top panel of the Unity interface works as the title bars of the active application window when maximised and contains the close, minimize and maximize/restore buttons (in that order, by default). It will also show the application's menu (the menu bar of applications made of 'File', 'Edit', 'View', 'Help' etc) when you hover your mouse over it. When the window is in focus but not maximized, the top panel will contain the application menu but not the close, minimize and maximize buttons. This behaviour is almost identical to that of Mac OS X.

The sidebar of the Unity interface combines the effects and usability patterns of both Mac OS X dock and Windows 7 sidebar. The only difference being the place where it is placed. You can add as many application launchers as you want and as you move the mouse towards the lower or upper end, the bar will automatically scroll to show the list of more applications on itself. You can move the position of the application launchers on the sidebar by dragging them temporarily out of the bar then replacing them where desired.



New look: Showing the top panel and sidebar of Unity with FF4 in background

When you open a new window whose launcher is already there on the sidebar, it will automatically convert to a button (much like a Mac dock and Windows 7 taskbar behaves). If your launcher is not already present on the bar, one is created. When you minimize the window, you'll find the window (predictably) going to its icon on the sidebar. If there is more than one window for the same application, they're all minimized to the same icon (once again predictable). When you click on the icon with multiple windows, the most recent one is restored (maximized or restored to the position it was). If you want to switch to the other window of the same application, you'd have to click the same icon again. This will show the different window thumbnails on the screen. Select one from them. If you've used Compiz Fusion, you won't be surprised by this. This is somewhat similar to the way Windows 7 displays windows on its taskbar with AERO when you hover over the taskbar button.

The Unity interface depends heavily on Compiz to show its beautiful effects. So it's important that you have the hardware support for it. If your display adapter hardware is not potent enough to support Compiz or suffers incompatibility because of driver unavailability, you might not be able to run Unity on your desktop. In such a case, Ubuntu will notify you about it and will revert back to the classic Gnome interface. It is to be noted that the Gnome interface which comes with version 11.04 is not updated to the third version.

In case Unity is able to run on your machine and you're not happy with it for some reason and want to revert back to the default Gnome interface, Ubuntu would be happy to help you. All you need to remember for this is the password of your account. The procedure to change the interface is simple and as follows:

- ▶ Log out of Unity.
- ▶ On the login screen, first select your username.
- ▶ While Ubuntu is still asking you for the password, on the bottom panel change the interface from 'Ubuntu' to 'Ubuntu Classic'.
- ▶ Sign in.

You shouldn't be having the classic Gnome interface on the desktop.

The Gnome shell

Although we need not talk about the Gnome interface, there might be the case that you're completely new to the Linux world and are unaware that a computer can look and behave in a way other than Windows does.

While discovery is the best way to learn, this small guide might help you take your first steps.

If you're new to Gnome, you might be surprised that there is no Start menu. In fact, there are two panels – at the top of the screen and at the bottom of it. The bottom bar behaves just like the Windows XP taskbar where buttons will appear for every application window which will help you control the minimize, restore, focus and close functionality of the window. It might also have a trash button on the far right. Actually you can add a lot more functionality to the panel but by default, it does exactly what the Windows taskbar does minus shortcuts, toolbar icons, clock and start menu.

The top panel in its default layout will show you the clock, the toolbar icons of the applications that are running (and which you choose to appear there, e.g. VLC Media Player), networking and battery information and controls. It should also show you the system menus on the far right. The system menus contain three menus namely: Applications, Places and System.

Applications: menu will contain the installed software in a neat style organized in sections like 'Internet', 'Graphics', 'Office' etc. You'll find all your software here.

Places: menu will contain the links to your home, documents, music, pictures and any other bookmarked folders.

System: menu will contain the menus responsible for changing the settings of your system. It usually contains what the Windows control panel would contain.

Apart from this, you'd find things easy. We agree it will take time to be in tune with Gnome if you've been using KDE or Windows for a long time and have never used Gnome till now but once you've got the hang of it, you'll probably love it!

Where is everything?

The first mistake of a Windows user stepping into the Linux world would be to expect it to behave like Windows. You may expect to have your drives neatly laid out in the 'Computer' window, to have a 'My Documents' and a 'Start' button. While we've already told you that the Start button is missing in Gnome, we also need to tell you that Linux stores things a bit differently. Let's take the surprises one by one and uncover them.

Gnome has a computer window, and you'll find it in the Places system menu. This will list down the partitions on the computer. You can double-click one to open and read the contents. However, the concept of drives

is a bit different and the way by which files are accessed is different than Windows. We'll tell you about this in a while.

Where are the documents?

You must be fond of that old friendly 'My Documents' in Windows. We assume you've also found it inside the user profile folder (some also call it the 'user' folder and has the same name as the user). Assuming Windows is installed on C: drive, its path should be C:\Users\Vaibhav, if the user is named Vaibhav. The same folder should have the sub-folders for music, videos, contacts etc. Linux has a similar approach with a different name. It calls the 'user profile' folder as the 'home' folder. Some might also call it the home directory because the word 'directory' is used instead of 'folder' in Linux world. The path to the home directory would be '/home/vaibhav' if the username is vaibhav. Did we hear you saying 'strange'? We believe we just did. Next up, we'll explain why it is this way. Oh, and we just promised to show how drives are accessed. It's time.

Understanding 'mounting'; the Windows way!

Before we make a statement about how Linux mounts partitions on folders, let's understand mounting. Mounting is the method used to make the contents of some storage media accessible to the computer so that it can be read or written to. While Windows uses 'drive letters' to mount partitions, Linux uses folders. To understand how partitions can be mounted to folders, let's do the following on a Windows system. We assume here that the system has two partitions with drive letters C: and D:

- ▶ Create an empty folder named 'mountpoint' in C: drive.
- ▶ Right-click 'Computer' on the start menu and select 'manage'.
- ▶ On the computer management console that opens, select 'Disk Management' (under 'Storage') from the left pane. This should list down the partitions.
- ▶ Right-click the D: drive and select 'Change Drive letters and paths'.
- ▶ On the new window that opens, click on 'Add...' This will open up another window.
- ▶ Click on the browse button to select the 'mountpoint' folder in C: drive or type the path (C:\mountpoint) in the input box.
- ▶ Confirm this by clicking on the OK buttons on the windows that came up.
- ▶ Wait for a second, and then go to the C:\mountpoint folder (its icon would have changed).

If you've followed the steps and already have something in the D: drive, you'll find that everything that is available in the D: drive is also available under C:\mountpoint.

Hopefully the small exercise above has helped you understand the concept of 'mounting' and it would've become clear that drive letters are a way to make the partitions appear simple to the user. Linux (or say the UNIX) developers chose to have the way of having one folder and keeping everything under it. They decided to make the contents of different partitions appear as directories or folders within one folder. This is the reason Linux uses a different style for the path of files.

If you remember us talking about partitioning in the installation section, you would recollect that we mentioned something about the root folder. The root folder is the main folder under which everything else is kept. We denote it as '/'. It is this reason that all paths on Linux will start with a '/'.

Before you start hunting down things on your Ubuntu machine, let's familiarize you with the folders (or directories) that essentially exist on all Linux machines and are required for its working.

/bin: This directory contains the commands which should be available to all users. It would normally contain the executable files for commands like ls, cal, grep etc which are used in everyday Linux environment, directly or indirectly.

/boot: This directory would contain the boot files which are used to bring the system up. It includes the kernel (vmlinuz), ramdisk image (initrd.lz) and bootloader configuration files.

/dev: This directory does not consume any space on disk and is used to keep track of devices connected to the computer including the ones which are a part of the CPU such as the disks, modems, display, sound card etc.

/etc: If you were to change some setting and didn't know where to look for it, you'd probably head towards this directory. It contains all the configuration files, ranging from the ones which control the booting of computer to the ones which can change the behaviour of installed software and services.

/home: We've already told you that the 'home' is the user profile folder in Linux. This directory closely resembles the C:\Users folder on Windows. Every user on the system would have a separate directory within this sub-directory.

/lib: Linux keeps its libraries in this folder. If you've never heard the word 'library' in context of computing, we'd define it as a reusable resource that more than a single software can depend on. For example, if more than one

application wants to use the Bluetooth connected to the laptop to send data to another device, they can use the same library.

/media: Although this directory isn't a part and parcel of Linux, it is usually the place where you'll find your USB drives and cameras get mounted under Linux when you connect them. We hope you remember the concept of mounting we showed just a few hundred words ago.

/mnt: This too is a directory which doesn't contain anything important by default, but in most cases is used to create mount points for other file systems which are attached to the computer on boot, e.g. Windows partitions.

/opt: The directory is used to install optional software packages. For example, if you were to install Google Earth for Linux, it would be installed within this directory. \

/proc: The directory is freely available for browsing only to the 'root' user. This directory contains files and directories which explain the state of the system. The directory doesn't consume any space on disk. It's a virtual directory that exists only in the system memory. Remember that the master administrator account of Linux is called the 'root' user.


/sbin: It is here that you'd find the commands to change system-wide settings (read: administration). This one, once again, is a property of root user. No trespassing, please!

/sys: It contains the files related to the PnP facility under Linux (including Ubuntu)

/tmp: It is THE temporary directory for Linux. While Windows has a split personality when it comes to 'temporary directory' thoughts, Linux maintains its personality by keeping every tmp file in the tmp directory.

/usr: You can call it the program files folder of Linux. The /usr directory also contains some other system-wide elements (in addition to programs) such as wallpapers, themes and a few libraries which are installed as part of software installations.

/var: The name suggests its contents. The files in this folder are mostly those which change often. It includes the webroot directories, databases and a few similar things. Do remember however that it is not to be removed.

Of all the mentioned directories, the /home directory is where you'll find yourself storing everything (unless you've mounted other partitions with right permissions) mainly because of permission restrictions imposed by Ubuntu Linux. 



INSTALLING SOFTWARE ON UBUNTU

After you've installed Ubuntu on your system, you can try out interesting applications from a vast repository.



e said Ubuntu comes with everything which a home user would need, but we

keep coming up with ways to want more! In this section we would show you what Ubuntu comes with and how you could have those things which you do not get in the default package.

What comes preinstalled with Ubuntu?

Ubuntu is a great OS when it comes to ‘install-n-go’ situation. The first reason is that you can run it from a USB / CD without installing it. The second reason is the availability of software. Unlike the default Windows installation which would require a messaging client, an office suite, an antivirus to complete the picture, Ubuntu comes preinstalled with almost everything one needs to get the basic tasks done.

Web browsing: You have one of the best software available with Ubuntu as default web browser. It is the same software which holds the record for maximum downloads in 24 hours. It is fast, secure and offers lot of functionality with add-ons. Ok, no more riddles, we are talking about Firefox.

PIM: Although we are used to the webmail, there are some cases and people requiring the old email client method to read the email. Outlook you say?

Well, we do not have Windows in the picture here. Nonetheless, the software Ubuntu offers is a great one. It's called evolution. It can manage your Email, Calendar, Contacts and a few other to-do items. Nice replacement for Outlook; and a free one.

Social: Man is a social element and web has become a social circle. Thanks to MZ. You can use Gwibber to update your status to both Facebook. In case you ask 'how to tweet', well it has support with twitter too!

Office: we have already talked enough about this. LibreOffice can take care of all your needs, almost.

BitTorrent: This is one technology which has been made infamous largely because of its wrong use. However, there is legitimate software, especially free ones which are distributed over bittorrent networks. Ubuntu comes with 'Transmission', a simple, intuitive client to take care of torrents.

Chat: Before there was Facebook, there was yahoo messenger. People who belong to the pre-facebook era still are in love with Yahoo and Gmail messengers. It allows them to talk to buddies not only in the SMS style but also in the phone and 3G style. Ubuntu's answer is empathetic. It comes with a chat client called Empathy which facilitates text, voice and video calls over Google and Yahoo (and many, many other) networks.

Music: Windows media player might be the best bet for those who have nothing to do outside of the word 'MP3'. For some who want fewer restrictions with their music, prefer free codecs. Ubuntu comes with banshee as the music manager which easily takes care of your existing music as well as allows you to purchase new music from Ubuntu store. It however does not play MP3. Do not be disappointed. We give you two reasons: first, you can always ask Ubuntu to get the MP3 and other restricted format codecs; second, we have packed up Digit OS with VLC Media player especially for you in case you are unable to connect to the internet, but more about that later.

Video: Totem can take care of almost all simple needs but once again, in case you need more, you can have Ubuntu get some more from the internet.

Pictures: If you have shotwell, you will have a nice feature set to help you manage your pictures. Shotwell is the picture album manager with basic editing capabilities to satisfy your needs.

That is not much of an exhaustive list but then as we said, Ubuntu does come with the basic software for everyday purpose.

Installing new software packages

Though Ubuntu has everything we would need in our everyday lives, we

show you the trick for the one which would be special. Ubuntu categorizes software into the categories according to how open they are. To get the most out of the online software treasures, first enable all the available repositories.

To do this, you need to launch the Ubuntu software centre. You should find it as the last item of the Application menu in the Gnome shell. In unity, you can search for it on the dash and you will have it. After the window opens, edit the software sources by clicking the Edit menu and then selecting Software Sources. On the first tab, named Ubuntu Software, make sure that all the repositories (main, universe, multiverse and restricted) are enabled. This will give you the most number of options for installing software. After making the changes, close the window. Ubuntu will automatically try to get online and update its list of software packages. Once it is done, you can search for the software in Ubuntu Software Centre and install the one which you want.

Not only this, since the new release of Natty Narwhal (version 11.04), Ubuntu software centre also facilitates the rating system so that you can get to know how good or bad a software is considered to be in the eyes of those who have used it. However, if you think that a software has been rated by too few people and you believe that it's the one which can help you complete the task, go ahead and try it (bandwidth meter be in front of your eyes though) and tell others how well it worked.



Ubuntu software center: The one place to find software

Once you select software for installation, USC will automatically find out which other packages are needed to make software run and installs them. These additional software package(s) required to make a particular software run are called dependencies. If you wonder why is it necessary at all, let us get back to the description of `/lib` directory. We already said that Linux maintains a single set of software libraries. We also gave a simple example where we said that if a software (say a picture management application) wants to use the Bluetooth device connected to the computer, it will have to use the library which can communicate with the hardware and get the work done for the software. In this case, the first software (the picture manager application) depends on the Bluetooth library without which it might not work properly. In such a condition, we call the package which provides the Bluetooth library as a dependency for the picture manager application.

Using Ubuntu Software Centre is not the only way to install new software. For a finer level control, you might have to start up the Synaptic Package Manager which does the same work as Ubuntu Software Centre. The difference lies in the level of control offered by these two different looking programs. While Ubuntu Software Center (Ok, let's call it USC henceforth) simply shows you the software which you want to install, Synaptic shall show you both the requirements, the dependencies, the size to be downloaded and consumed after the installation of the software, individual file progresses and a lot more options to choose from. Synaptic is for those who understand what software packages are and how to install them. Using Synaptic package manager is slightly more difficult than using USC.

Installing software in a more geeky way

Ubuntu is a Linux distribution and as they say, Linux is for geeks. Although Ubuntu makes it too easy on you by offering you really nice and cool ways to search and install software, there always is a more sophisticated way to do it. To install software from the terminal, you should know the right commands to be used. Before installing the software however, you must get the updated list of software from the Ubuntu servers, at least once. Performing any software install using built-in commands for package management would require internet connection (except when you are removing them).

The most used command for installing software from the command line is 'apt-get'. To get the updated list of packages from the Ubuntu servers, run:

- `sudo apt-get update`

This will make Ubuntu contact the servers and fetch the list of software packages and consider them the next time when installing software. So if it happens that someone says that a particular software or some specific version of it is available in the Ubuntu repos but your system does not agree, run an update. Remember however that an update is different from an upgrade. While an update gets only the list of software from the servers, an upgrade will actually get those packages and install them on the machine. If you wonder what the 'sudo' command does, it makes you the root user temporarily for running a single program. Sudo will ask you your password when you enter the command. If you do not use 'sudo' in the beginning of the command, the command will fail because it requires admin privileges on machine to install software.

Installation of programs on Ubuntu is also a simple job. You just have to change the action for the apt-get and add in the package name of the software which you want to install.

To install gimp, for example, type this into the terminal:

- `sudo apt-get install gimp`

The above command will automatically find out whether gimp is already installed or not. If it is installed, you will be notified. If it is not installed, apt-get will find out how much data it needs to download in form of software and dependency packages, how much space will it consume on disk after installation and then prompt you if you want to continue. If you think that it is fine to go with, just confirm and it will automatically download, install and update the menus to reflect the changes.

Now if you wonder what if the internet connection breaks down while downloading packages, let us tell you that you will have to type in the same command again to make Ubuntu complete the installation. Be not worried however because the download will resume exactly from the point where it broke down from.

Another question that would come up when installing software from command line is: How do I search for a particular software package? There is no search bar! Well, as a surprise to many, apt-get does not help you search for packages in Ubuntu repositories, but aptitude does. So install aptitude first:

- `sudo apt-get install aptitude`

After aptitude gets installed, you can search for packages by using the command in format:

- `aptitude search <package _name>`

For example, if you wanted to install chromium but 'apt-get install chromium' is saying that the package name is incorrect, you should first search for the exact package name. You would use aptitude as:

- `aptitude search chromium`

to get the list of packages which contain the word 'chromium' and then select the relevant one. In this case the package 'chromium-browser' is the relevant package. Once you get to know the name, install the package using apt-get.

- `sudo apt-get install chromium-browser`

Even if every graphical program is failing, you can make use of the terminal and install something new on the machine.

Removing software packages

Sometimes when you install software, and it does not work the way you wanted it to, the first thing you want to do is to remove it from the machine. Software removal (or 'uninstallation') can be done by using any of the software which was used for installation. If you installed something using Synaptic and now want to uninstall using USC, it can be done. You can also use the mighty command line for the same.

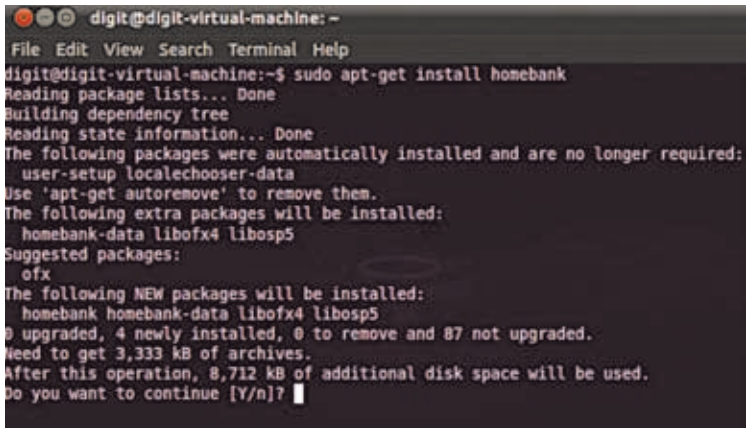
To uninstall using the USC, open it and on the left pane, select the installed software category. Then search for the package which you want to remove using the search bar. Once you find it, simply click to focus it and click on the remove button to remove it from the system. This is the easiest method you can use to remove software from the system.

To uninstall software from synaptic package manager, open the tool and search for the package name. You can easily differentiate between the installed and the not installed packages. Once you have it under your eye, click on it to get the options. You know what to do next.

If you want to remove software from the command line, once again,

apt-get is the tool you have to use. You can also use the aptitude program for the same. While apt-get gets the work done, some people are in favour of using aptitude for the same. One of the reasons which are prime is that aptitude is more clever in software removal and would also remove those dependencies installed while installing the software package which would not have any program dependent on themselves after the removal of a package. To remove package using apt-get, use:

- `sudo apt-get remove <package _name>`



```

digit@digit-virtual-machine: ~$ sudo apt-get install homebank
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  user-setup localechooser-data
Use 'apt-get autoremove' to remove them.
The following extra packages will be installed:
  homebank-data libofx4 libosp5
Suggested packages:
  ofx
The following NEW packages will be installed:
  homebank homebank-data libofx4 libosp5
0 upgraded, 4 newly installed, 0 to remove and 87 not upgraded.
Need to get 3,333 kB of archives.
After this operation, 8,712 kB of additional disk space will be used.
Do you want to continue [Y/n]?

```

Command your way: Trying to install HomeBank using apt-get

For example, to remove nmap, the command will be:

- `sudo apt-get remove nmap`

To use aptitude, you need to slightly change the command. You should be using the 'purge' keyword as below:

- `sudo aptitude purge <package _name>`

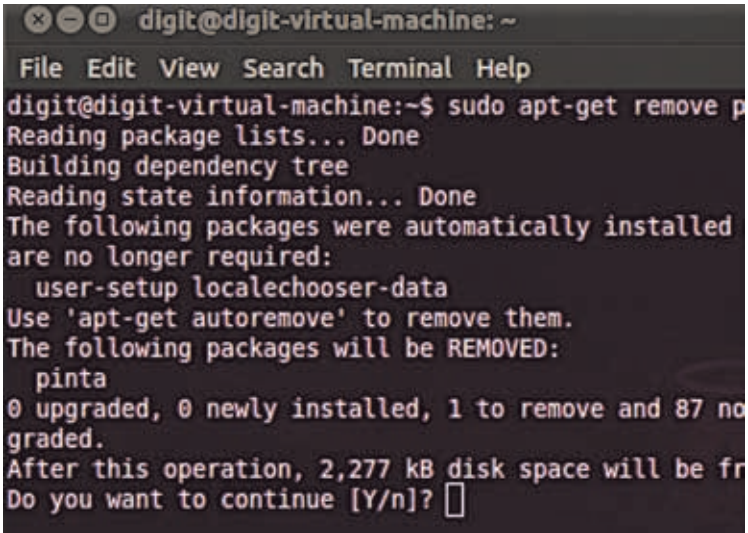
Once again let us remove nmap from system. The command would be:

- `sudo aptitude purge nmap`

You can both install and uninstall more than one software package in a single line. For that matter, `sudo apt-get install nmap chromium-browser vlc` and `sudo apt-get remove nmap chromium-browser vlc` are valid commands and should work as expected.

Updating packages

Update manager is what takes care of this section of worries. Unless you have disabled updates altogether, update manager shall keep you posted about the new updated packages available on Ubuntu repositories. You are even allowed to select the packages which you want to update. This makes it easier to update only what you want. For example, updates on VLC are mostly practically useless because a minor release usually does not change anything but the update costs bandwidth. If you are in tune with our thoughts, you would not want to update VLC from 1.1.7 to 1.1.9



```

digit@digit-virtual-machine: ~
File Edit View Search Terminal Help
digit@digit-virtual-machine:~$ sudo apt-get remove pinta
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  user-setup localechooser-data
Use 'apt-get autoremove' to remove them.
The following packages will be REMOVED:
  pinta
0 upgraded, 0 newly installed, 1 to remove and 87 not upgraded.
After this operation, 2,277 kB disk space will be freed.
Do you want to continue [Y/n]? 
```

Uninstall via command: Removing Pinta image editor using apt-get


specially when it can take 20 MB of data transfer. Although it is recommended by Ubuntu to get new software updates as soon as possible, most people understanding the needs and complications, might like to change the settings. It can be done on the same window which is used to select software sources or by clicking 'settings' in update manager.

If you want to update packages using command line, you might want to use apt-get (again). Just say:

- `apt-get upgrade`

This should download the new packages from the servers and install them right away.

There is a word of caution for the users of devices for which Ubuntu installed restricted drivers. Sometimes an upgrade changes the Linux kernel version on the system. Drivers are heavily dependent on the Linux kernel versions. It is unlikely that a driver compiled (read created) for an older version would work with a new one. From Bluetooth to graphics cards might stop working if you upgrade your Linux kernel without making sure your driver too is getting upgraded. Mostly, Linux kernel packages start with the word 'linux'. Unless you are sure that Ubuntu provided restricted drivers are going to work after kernel update, do not update the kernel. This is highly unlikely to happen because Ubuntu cross checks every update before sending it out to the user, but at times when it happens, it can have catastrophic results. It is best to avoid very minor updates to Linux kernel in such situations.

If you installed any driver manually, chances are Ubuntu does not know that and will not consider it when upgrading to the next kernel version. Please make sure you do not perform kernel upgrades in such conditions. Although a kernel version upgrade succeeded and worked normally on a machine where NVidia drivers were installed manually, it cannot be promised to work again, even in future. Again, although the upgrade had succeeded, the screen started showing strange changes at times after the upgrade. Please take care of kernel upgrades. Do them with utmost care and keeping in mind that Ubuntu does not recognize manual driver installations. Even in case of automated ones, sometimes the kernel upgrade is known to break propriety drivers. 



WHAT CAN YOU DO WITH UBUNTU

Open yourself to the free and open world of Ubuntu.



buntu is potent of a lot of tasks even in its barebones for which other operating systems would need more software muscles. That

would easily involve multi protocol messaging clients, bittorrent download clients, social network clients and a fully fledged office suite. Ubuntu is, just like any other operating system capable of installing more software if needed. There is a nice and long list of such software. We shall talk about them as we show you what can be done with Ubuntu.

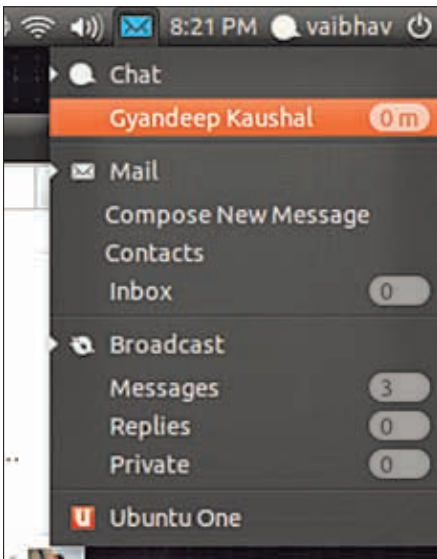
Social networking made easy

We have come a long way since first IRC channels were created. Facebook and Twitter are the blood lines of modern social interaction and how! You can facebook your friends from anywhere. For all platforms, there are not one much many clients for updating your status to Facebook and twitter. Ubuntu we would say with confidence has just one. It's not the lack of software we want to talk about in the previous sentence. It is because Ubuntu does not need any more than one.

To be able to do so, you should first you should first setup a broadcast account. To do so, on the top panel go to the right side and click on the envelope icon and then select "setup broadcast account". A new window pops up where you can add a new account for Twitter, Facebook and Identi.ca.

Assuming you are trying to setup a Facebook account, select it from the list and click on the add button. A new form comes up where you have to click on the “Authorize” button. You will be asked the Facebook email address and the password in the same way as on their login form. Once done, confirm and you will be able to update your status using Gwibber. Now you can easily update your status and receive updates from Facebook. A similar thing can be done for Twitter as well. Isn’t that easy?

Chatting with friends is another time pass activity or maybe it involves your business to keep yourself updated with you clients and partners. Whatever may be the case, you can use Empathy, the chat client which comes with Ubuntu, preinstalled. Whether it be Gmail, Yahoo, MSN, AIM, MySpace or even Facebook, Empathy has got it all. Need more? We don’t think so. Just click on the same envelope icon on the top right corner of the Unity or the Gnome interface and from the drop down menu, select “setup chat”. This would open up a new window which belongs to Empathy and would ask for setting up a new account or entering details for an existent account. We



At the touch of a button: All your social needs, under one menu

believe you are already a Facebook, Gmail or a Yahoo! Messenger user. Just select the right type of account from the list which appears upon clicking the forward button, enter your credentials and also select the option about

whether you want to setup another account and click forward once again. You will be asked to enter your first and last name and then click on “apply”. That’s it. It’s simple, sweet, easy.

The good thing about Ubuntu is that it allows you to change your status right away, right from the top panel. Just click on your user name and we think you already know what to do.

Although email is something which has gone old but, we believe you still use it. Many of us are Gmail users (should we say all of us?). Evolution is an email client which can download your email from Gmail servers onto your computer. This might not be exciting for those who have been using Gmail POP ever since it became available but if you have not tasted the feature till now we would like to say that it’s just great. You can have all your emails, especially the important ones on your computer so that you can look at them even when there is no Internet connection. We are talking about the time when you are travelling and are out the network coverage area but are in a need to type down the reply to your boss instantaneously. Once again you head on to the envelope icon and setup email. This should bring the Evolution wizard for a new email account. Just follow the instructions and Ubuntu would be ready and happy to notify you about a new email that would arrive in your inbox. We just love the blue envelope. Oh and yes, the same icon will also notify you about any chat messages that were destined to reach you and have successfully made it. The difference would be in the icon however. It will turn to a chat bubble instead of an envelope.

We believe that is something we can call easy. As you can see, Ubuntu integrates a lot of social services which are part and parcel of everyone’s online life whether it be the cool dude living next door or the office colleague. Apart from this, you always have the good old browser to do what Ubuntu helps you to do right within the operating system itself.

Document editors that come pre-installed

What good is Windows without Word? If you think the same like we writers do, you would appreciate the fact that Ubuntu comes with a complete office suite and for free. The office suite is called LibreOffice and has previously been known as OpenOffice. The name change has more to do about the freedom philosophy in the software department. LibreOffice comes with all the software which an office suite like Microsoft Office would contain. Although there always are differences between any two things on this planet, LibreOffice tries to satisfy you with its set of tools. Let’s see them one by one.

- ▶ **Writer** – This is the LibreOffice equivalent for MS Word. It is a fully fledged word processor. Although it does not look like MS Office 2007 or 2010 but it is fairly powerful as any of them. It resembles more with Word 2003 and has almost all the functionality of it. You have the regular spell-check, drawing, graphics and similar tools which you would be used to of working with MS Word. Some people say with LibreOffice Writer, imagination is the limits of your creativity as it is capable of producing documents with fantastic effects as much as it would anyone fall in love with it. It is fully compatible with MS Word and can edit the DOC and DOCX file formats. Of course, since it is a different suite created by people who do not work for Microsoft, there are some glitches when trying to edit DOC or DOCX documents with complex formatting. You might not get the exact results when you open the same document in MS Word. But as far as basic functionalities and looks are concerned, you will not be made to compromise with. The default file format for Writer is ODT which stands for Open Document Text and is an open standard.
- ▶ **Calc** – You can call it LibreOffice Excel. It is the spreadsheet program for LibreOffice and comes with maximum number of supported features when compared with any other competing spreadsheet editor. You can



Free office suite: LibreOffice can keep the office happy

very well use it to edit those XLS and XLSX files you created with Excel. Formula editing, formatting, printing and chart creation are all free for you with LibreOffice Calc.

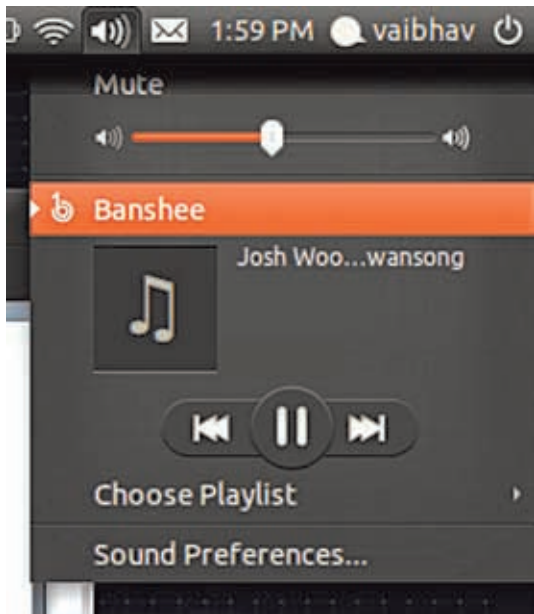
- ▶ Impress – It is a presentation editor with freedom. It can help you create presentations for almost every purpose you want. Filled with a lot of templates and effects in both sound and slides is what makes this free software a compelling consideration for a PowerPoint replacement. Just like with MS PowerPoint, LibreOffice Impress will impress you with its wide range of features. In every department of a slideshow presentation, there is something innovative you are allowed to do. You cannot call it impotent just because you don't have to pay a penny for it, we bet.
- ▶ Draw – This is a fully fledged graphics editor to help you draw anything between a children's book and an enterprise class drawing depicting organizational hierarchy of an institution. Although MS Word and LibreOffice Writer, both come with basic graphics designer for inserting into documents, Draw adds more muscle to LibreOffice when compared to Word because of the fact that it is a separate program which can be used to create a lot larger drawing. Just use it and you will come to know about its powers.
- ▶ MathJ – Word has its own formula editor which is cool. LibreOffice comes with a complete separate program to serve the same purpose and makes it icy. You can select from a wide range of equations for any type of scientific purpose. Not only can you create a very complex mathematical formula filled with almost every Greek character you know, it's going to be easy as well. You just need to remember the language which is used to create equations. Once done, once again, sky is the limit. You can ask it to show almost any formula. The same formula can also be shown in a text, spreadsheet or a presentation document. We believe that too impresses you.
- ▶ Base – For almost every purpose we know today, which would involve a database, someone has created a web application but there have been times and there are still a few cases where people depend on small database applications like MS Access. LibreOffice has something called Base for the same. In our true opinion, Base is a name which speaks of its purpose. It is a small database application which can help you create a form based application. You can use it to connect to remote database such MySQL or SQLite or use its own engine for serving the purpose. It can get flexible as you need it.

These were the application that come bundled with LibreOffice. However, there are people who would want to edit code more than they would want to edit documents or create presentations. To satisfy such code warriors, Ubuntu comes with a simple yet powerful text editor called Gedit. You can use it to create and edit small text files, Linux configuration files or source codes written in almost any language you can imagine. C, C++, Java, PHP, Python, XML, HTML, Haskel, Latex, Javascript, MakeFiles, Ruby, SQL are just to name a few. Stunned? We already told you its powerful, didn't we? In case, you are wondering whether it can also compile your programs, we would be a little sorry to say a little 'no'. But wait, Ubuntu software centre won't let you lurk behind. It can be used to install 'Kate'. Just give it a try and we would like to know how splendid an experience it gave you.

Entertainment

Man perhaps is the only animal which needs entertainment. We do not live in the age of Akbar when Mr Tansen would be required to create some music. Music now is a household term and we find our friends often collecting music files in gigabytes. Whether all that is legal or illegal is out of scope of

When it's time to groove: You can control music playback no matter what you are doing



discussion we have in here. But no matter what we all love to have a bulk of music and movies resting in our hard drives. Ubuntu comes pre-installed with media player for both music and video. We have for you Banshee which plays music for you. But as we told, Ubuntu does not support MP3s. Hold on; make your heart thump a little longer. Give us just one second to bring you back to life. Let us tell you that although Ubuntu does not play MP3 files by 'default', it can be hypnotized to do so. The best thing about Banshee is that when you start it and make it play, its first MP3 file, it would tell you that it did not find the proper codecs for playing the file and will offer you to download the codecs right away. What else do you need? Just confirm and Ubuntu would be more than happy to get you the free codecs from the Internet, install it and make you feel relaxed.

The reason Ubuntu does not play MP3 and any other restricted format by default lies in its freedom concept. Since you buy Windows or a Mac, they come preinstalled with the codecs required to play MP3 files. Microsoft and Apple would have paid for the license required to play MP3 files. Ubuntu on the other hand is given away for free. It is this reason that it cannot afford to provide those codecs which require investment on its part. The other part of the problem is the dislike most open source developers have for the restricted content including restricted codecs which are required to play MP3 files. The ones which Ubuntu downloads are developed by the community and are made available for free. This is the reason why you have to download them separately. The same is the case with other video formats. If you have (and chances are that you do), videos in AVI or WMV formats, Ubuntu would not be able to play them but would once again offer you free codecs when it first encounters a restricted video format.

Music

Ubuntu comes as we already said preinstalled with Banshee. It is the music player for Ubuntu. The best things about it are the ease of use and the integration of services that it offers. You can launch Banshee from the Unity top panel by clicking on the sound icon. Banshee also integrates with the online music stores like Amazon MP3 Store, Miro Guide, Last.fm and finally the Ubuntu One Music store. The interface of Banshee is something between that of iTunes and Windows Media Player. It has a sidebar and the right hand bar which has playlists and cover arts listen on its face. You can select the playlist or music source from the left and listen to it.

If you are unaware, you would find Ubuntu one an interesting addition to the Ubuntu Linux Operating System. It is advertised as a personal cloud which can be used to store your files online with 2 GB of free storage and integrates your music and contacts via the cloud. You can have both of these on any device which would have the support for Ubuntu one via an application. Ubuntu one is available not only for Ubuntu but also for Android and iPhone so that you are never away from your music collection...err, personal cloud! The team has recently also come with a Windows client which is up for testing.

Apart from Banshee, Ubuntu also comes with a lot more options for playing audio. One of the other alternatives which come preinstalled is the totem movie player which is also the default video player. You would find it on the application menu under the multimedia section named simply as 'Movie Player'. If you are on Unity, simply type 'player' in the search bar and you will get it as the first result.

There are some other media players too which come with some great features. This would include a fairly nice list. We will list down a few which you might like:

- ▶ **Amarok:** This player is the default music player for the KDE environment (please remember that Ubuntu comes with the Gnome environment). This one player can be used for some serious playback facilities. Playlists are a part of almost every player now. But a 'Play Queue' is something unique with Amarok. You can easily use play queues to make a song play for 3 times and then go to the next one on the list. You can transfer music to your iPod (and of course some other media player too), can get the media information from the internet and what not. It even allows you to browse for folders and files from within the player (does not require opening separate file browsing window) and add them to the list. Internet services like last.fm are, of course, supported.

What if you have a nice playlist but do not want to listen to it till the last song but stop in the between? The first thing that would come into mind would be: "remove the unwanted tracks from the list". Not if you are an Amarok user. Amarok allows you to mark a song as "stop after this" so that when the player has played the marked song, it will not progress ahead to make the next one come through speakers. In case you get in mood with the list and want to listen to the full playlist, just remove the mark from the song and you will have saved yourself some

time scratching head with playlist arrangements. One can, looking at the feature set, easily call Amarok the iTunes for Linux.

Run the following command to get it on the machine:

- `sudo apt-get install amarok`
- ▶ **Rhythmbox:** This player was made on the lines of iTunes. Although iTunes is said to be best for Music playback, Rhythmbox does try to come close, at least in the looks department. Some might call it just another player. It although is better than many other players with interfaces far from intuitive. With support for internet radio, automatic playlists and media browser like iTunes, it certainly is a nice music player. Find it in the Ubuntu Software Centre and try it. Keep it if you like it.
- ▶ **VLC:** Do we need to explain something? It just plays everything. Just do a `sudo apt-get install vlc vlc-plugin-pulse mozilla-plugin-vlc` and hit enter on gnome terminal.

Video

Video on a computer was thought of more as a magic. We would use the phrase 'once upon a time' for such times. After the YouTube revolution on the internet, almost every person with any type of video player had something interesting on their device. Devices ranged from large screen TVs to small mobiles. Even before YouTube we have been fond of watching videos on our computers. In a world as today we want videos everywhere. Ubuntu team realizes this and has packaged Ubuntu with the totem movie player which can be used to enjoy the videos. Once again, totem would not play any restricted format but you can install the codecs which will enable it to.

There are people who already know that VLC can be installed even on a Linux system. For those, there might not be any problem. They would install it using the USC, Synaptic or the command line. For those who did not know, you have already been installed. If you want to know how to install it, look into the section where we have explained the software installation process. You would not wonder about the command line process if you reached here reading every word of this small manual.

There have been cases when VLC has been accused of blasting off laptop speakers. It simply goes beyond the limit. It actually pushes the speakers to 4 times the limit by allowing the volume to go as high as 400%. If you are not in a mood to install VLC for that reason but still want to enjoy videos,

we recommend you get the restricted codecs installed. Run the following commands on the Ubuntu desktop:

```
• sudo apt-get install libxine1-ffmpeg gxine mencoder
mpeg2dec vorbis-tools id3v2 mpg321 mpg123 libflac++6 ffmpeg
libmp4v2-0 totem-mozilla icedax tagtool easytag id3tool
lame nautilus-script-audio-convert libmad0 libjpeg-progs
libquicktime1 flac faac faad sox ffmpeg2theora libmpeg2-4
uudeview flac libmpeg3-1 mpeg3-utils mpegdemux liba52-0.7.4-
dev
```

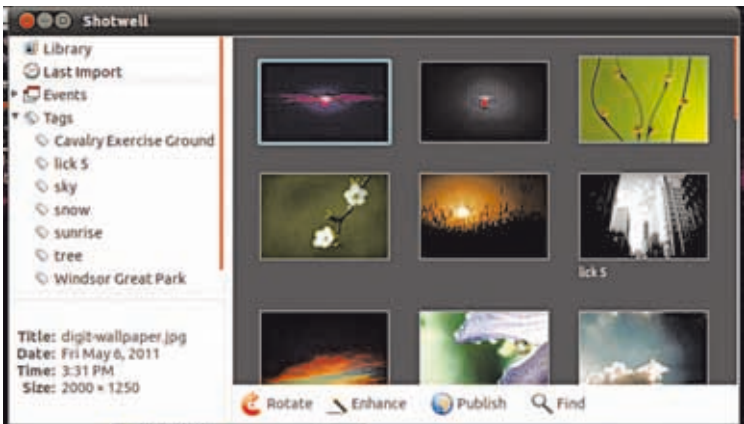
and

```
• sudo apt-get install gstreamer-dbus-media-service
gstreamer-tools ubuntu-restricted-extras
```

This should take care of almost all type of videos you want to play. You may also like to install mplayer for videos. Mplayer is another player which can play almost anything.

Images

We love to go back in time, into the memories which make us feel good. The trip with friends, the awkward situations, the lovely visits by our dear friends. Pictures say millions of words and they do so even more



Editing images: Shotwell can take care of basic picture management and editing tasks

when they look just the way they should – perfect. One would not like to produce the artistic quality effects on all the pictures possessed by one unless one is proficient with the use of powers provided by graphics editing software like Gimp and Photoshop. For those lesser mortals who do not have the magic wands, Ubuntu provides with something called as ‘Shotwell’. It is a photo manager and basic editor, just the way Picasa is on Windows. The difference is that Picasa is a bit more sophisticated and memory hungry than shotwell.

If you want to have real powers at hand, you might like to use GIMP which stands for GNU Image Manipulation Program and has been said to be a competitor of Adobe Photoshop in the past. The Gnome framework has a lot of elements which were actually developed just to create GIMP. Gimp’s interface might feel strange for people who do not like many windows floating around on the screen. Nonetheless it is one of the most powerful image editors available in the world.

If you want to have a really simple image editor, which resembles more like Microsoft’s Paint than Adobe’s Photoshop, we suggest you download and install something called as ‘Pinta’. It is a basic photo editor which allows you to take control of the images with basic tools of drawing lines, rectangles, ellipses and so on. Some more interesting programs include ‘DigiKam’ and ‘F-Spot’.

Games

This is one department when Linux developers seldom look into. The reasons we believe have already been discussed in a previous section. Although there are not many gaming companies which make games for Linux, there are some small time pass games which come bundled with Ubuntu. The two of them which happen to be very interesting are solitaire and Sudoku. The solitaire game which comes with Ubuntu, unlike the one which comes with Windows would allow you to play multiple solitaire card games. Sudoku too is interesting. You may also like to install a chess games (there are many) and enjoy the mental wrestling with your computer.

The following is a non-exhaustive list of games which are freely available for Ubuntu:

- ▶ Bos Wars – A real time strategy game.
- ▶ Chromium – although there is a browser by the same name, this little game wrapped inside the theme of space fight would remind you of the age old video consoles which could produce not more than 256 colors.

- ▶ Extreme Tux Racer – Make your penguin race down the mountains to complete the race.
- ▶ Freeciv – a strategy game based on turns.
- ▶ Frets on Fire – a game which requires some musical skills (with a guitar of course).
- ▶ Gcompris – It's not one game but a set of some which includes mostly educational games.
- ▶ Lbreakout2 – This is a brick breaking game with a horizontal slider on the bottom and bricks on the top.
- ▶ Nexuiz – A 3D game in a deathmatch style.
- ▶ Secret mario chronicles – If you have loved Mario, you will love this one, for it is a clone.
- ▶ Super tux – Another Mario clone with a penguin going through the lands instead of Mario.
- ▶ Torcs – A car racing simulation game.
- ▶ Xmoto – This one will make you think about how good a biker you are. It is 2D but really interesting.

If you are ready to play by paying, there are a few available as well. You might have heard of some before but never knew they existed for Linux too!

- ▶ Doom 3 - It was once the benchmark game for graphics cards under Windows. The game revolves around zombies, and of course you!
- ▶ Enemy territory: Quake wars – A 3D FPS game when you are put in the year 2060 to save the planet.
- ▶ The penumbra series – A set of three games based on survival horror theme. These too are 3D games.
- ▶ Quake IV – Once again a nice FPS in 3D to shake you.
- ▶ Unreal Tournament 2004 – Well, you would already know about it, if you loved games enough to miss them on Linux.
- ▶ World of Goo – Physics based time pass. It makes your brain power hungry!

We hope you loved the list. A lot more games are available. Just make use of the Ubuntu Software Centre wisely and you will not be disappointed.

The more common tasks

There is a lot more to any system than what we have talked till now. At times when things do not work well, one has to change the network settings, a few hardware settings here and there and so on. If you have a laptop, you might like to have a wireless connection set up for your Ubuntu laptop in your

home premises. All this is everyday task and problems we need to take care about from time to time. We show you how to get through a few of them.

Networking

No one who has every used internet would like to stay away from it. There are people who spend their whole day on the internet, watching videos, updating their friends and receiving updates, check their emails and what not. For those who are part of an office would be using the network of networks for getting the job done. No matter where we are today, we always want to stay connected. Ubuntu can help your social connection by making your network connections easier, in fact a lot easier.

A network icon is present in the top panel on the right corner. If you have a router to which you are connected by an Ethernet wire (a typical desktop setup for home and office), then chances are you are already into the network. This is behaviour with significant resemblance to the world of Windows. However, unlike Windows, Ubuntu places the controls for modifying your network setting right under an option which you get when you click the network icon on the panel.

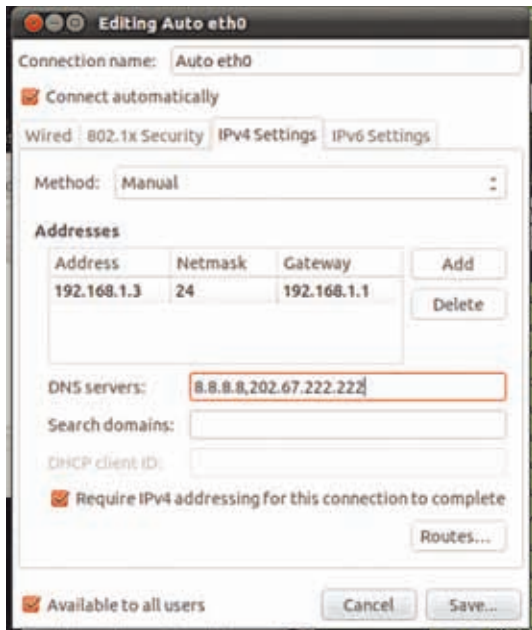
Connecting to an Ethernet network with DHCP enabled – In case you do not know, DHCP stands for Dynamic Host Configuration Protocol and is the set of rules which allow a computer on a network to get its IP address from a remote server. The way it works is simple. When a computer is started (in more strict words, when an interface is brought up), it broadcasts the request for getting its IP address. The machine which is responsible for allocation of IP addresses responds and negotiates to send a network address to the machine which broadcasted the packet. It is this technology which allows the computers to get online without having to configure settings for the network. If you are on Ubuntu and want to connect to a DHCP enabled network, you just need to connect the Ethernet wire.

In case you are using DNS servers other than what the DHCP server sends you, it is simple and easy to set it as well. Just click on the networking icon on the top right corner and select 'Edit Connections'. On the new window that opens up, select the 'Auto eth0' (unless you have changed the name already) on the 'Wired' tab and click the 'edit' button. This will open up another window where you will be able to change the settings for the Ethernet network. In the window with title 'Editing Auto eth0' open the 'IPv4 Settings' tab and change the method from 'Automatic (DHCP)' to 'Automatic (DHCP) addresses only'. This should enable the DNS servers input

box on the lower part of the window. You can use this technique in home if you are using a DSL router to connect to the internet and are annoyed with the slow speed of DNS servers of your ISP. You can enter the list of DNS servers which would work fast. We find the addresses 8.8.8.8 and 8.8.4.4 quite fast. These DNS servers belong to and are maintained by Google. So you can be sure they will not be slow or down. Another good set of DNS servers is 208.67.222.222 and 208.67.220.220. These two addresses are from 'Open DNS' and are very fast as well. Open DNS offers a few additional functionalities for registered users. Do not worry though, they are free to use even if you do not register. In case you are greedy, you can simply type 8.8.8.8, 208.67.222.222, 8.8.4.4, 208.67.220.220 in the DNS server list. This will add all of them to the list of Ubuntu and you would be happy to have a fast browsing experience.

Connecting to an Ethernet network with DHCP disabled – If you have not activated the DHCP server on your router or for some reason are not able to use the DHCP service, you would have to enter the IP addresses manually. It is not tough either. Just follow the same steps to edit the Eth-

Get connected: Setting parameters for LAN is not too difficult.



ernet connection of your choice and once again go to the 'IPv4 Settings' tab on the editing window. You simply have to set the 'Method' to Manual. This should activate the Addresses section on the window. Click on the 'Add' button to create a new line on the list. Enter your IP address under the Address column, the netmask and Gateway addresses and then enter your DNS information in the lower part as we told you earlier. This should get you going.

Connecting to a broadband connection: Not everyone happens to have a wireless router at home but most broadband users would be using the 'dialling' method to get online. Just a few years ago the Linux discussion forums over the internet were filled with questions about how to use the PPPoE (it stands for PPP over Ethernet) or DSL connection on Linux. The Gnome team took the problem seriously and we have in Ubuntu the real easy way to connect to a DSL connection. In case you are wondering whether you already use a DSL connection, we would help you decide. If your answer would be 'Yes' to someone who asked "Do you have a Wired broadband connection and your ISP has given you a Box with a few LEDs blinking but to does not have wireless connection feature and you have to dial from your computer to get connected?", then we believe you are using a DSL connection and this piece of text would suit you.

Ubuntu does not detect that you are a DSL user who dials over the Ethernet wire to get connected to internet. You will have to tell it the fact that you are one. Just click on the networking icon again, and select 'Edit Connections'. On the 'Network Connections' window, switch to the 'DSL' tab and click on the 'Add' button. A new window would come up. This window will have the 'Connection name' at the top of it. By default the name is set to be something like 'DSL Connection 1'. You might set it to something more friendly, such as 'BSNL Dataone Broadband'. On the window, enter your username and password on the DSL tab (should be active by default). That should be it! Simple, isn't it? Well, if you further want to control the IP settings, you can use the 'IPv4 Settings' tab. In case your ISP has allocated a static IP address for you, you can use the 'Manual' method or if you want to simply use DNS servers other than your ISP, you the 'Automatic (PPPoE) Addresses only' method and set the DNS server. Then hit 'Save' and you would be asked to enter the password. Do so and you are ready to dial. Just click on the networking icon again and select the name you entered when setting up the connection. In our case, that would be 'BSNL Dataone Broadband'.

Connecting to Wireless networks : When was the last time you heard about a laptop or a netbook which did not have the 'Wi-Fi' support? Unless you have been in love with computing for more than 8 years, your answer would be 'never'. We want each one of our devices to have a wireless support, for some even a desktop would be best if it had a Wi-Fi adapter. The more recent motherboards already have it. Most colleges across the country feel proud to announce that they provide Wi-Fi access to students. In such a case, it would be really necessary to know the 'how' part of a Wi-Fi connection.

Ubuntu is not very different from Windows 7 which happily lists down the available wireless networks when you click down the networking icon on the panel. You know how to connect to it already! Just click on the icon and you will be asked to enter the secret (we mean password). Enter it and you are ready to go. In case the network was open, the procedure is shorter, of course, skipping the password entry part.

Once again if you have disabled DHCP on Wi-Fi (and we suggest you to do so as it makes the work more complicated for someone who knows your password by trick or by luck) then you would have to change the IP address details. Once again, the same procedure: click network icon, then select 'Edit Connections' and select the entry you want to edit from the list on 'Wireless' tab. You know the rest.

In case your connection is one which is hidden, you can click on the network icon and click on the 'Connect to hidden network'. This should get you to the similar windows where you can enter the name of the network, the encryption options and the password, networking settings (DHCP or not, the IP addresses, DNS server addresses etc) and that would be good enough to get you going.

NOTE: One of the machines we installed Ubuntu 11.04 on kept showing the message "Wireless disabled by hardware switch" under the networking icon menu on the panel. In case you get the same, the following command should work for you:

- `sudo rfkill unblock all`

Changing other settings


There are a lot of other settings which can or need to be changed for getting your computer run the way your desires direct it to. Linux since very long has suffered the lack of a Windows style Control Panel. There has been openSuSE which uses Yast as the control panel. In Ubuntu and many other

debian based distros, this was a missing feature. Ubuntu comes with the system settings window which can be found by clicking the ‘System settings’ option which is revealed upon clicking the power button on the far right corner of the top panel.

Some of the settings which can be altered by this the system settings windows are;

- ▶ Preferred applications for tasks such as web browsing, email, text editing and so on.
- ▶ Appearance of the system. This option will help you choose and change the theme, background, icon set etc. To be used on the system.
- ▶ Startup Applications; those applications which you want to start or prevent from starting upon system start can be set here.
- ▶ Package management – the synaptic package manager which you can use to install and remove packages.
- ▶ Login screen settings
- ▶ Users, user groups and related settings (UID, Shells, autologin etc.)

The usual settings like keyboard, mouse, network and sharing settings, a few network tools, power management, printing preferences etc can also be changed from the system settings window.

In case you want to change some settings which you are not able to find in the control panel, you can simply use the terminal. This is the most powerful thing about Ubuntu (or any Linux). Almost everything which you can do with a GUI control panel style application can also be done through the terminal / shell. For some it might look like a real tough task to remember commands. But once you discover the right set of commands, you will fall in love with the speed and flexibility offered by the terminal. You do not have to open a window, click something, open another window and change options in three different windows again. A right command will always get the work done. Also, you would not have to search for commands in so many windows and pull your hair screaming at yourself “where did I find the setting last time?” Moreover, if you are just a regular user, you would not have to head towards the super power. 



RUNNING SERVICES ON UBUNTU

For those of you who want the most out of your operating system.



e have already said that Linux is an Operating System which excels at server side. In

fact most web servers on the internet use some Linux distribution to make things happen. Ubuntu being a Linux distribution also fairs well in this area. Although, the names like RedHat, Novell and CentOS are more popular in this area, some of the major sites on the internet use Ubuntu as their operating system. Google is known to be one of those companies who have in past and are using Ubuntu server edition to run their services. Although Ubuntu releases a separate server version for those who want an OS for use in production systems, it is not suitable for the home user. The first reason is that it lacks GUI. All and everything Ubuntu server can be asked to do has to be done via the command line.

Ubuntu server comes with the essential tools for server purpose instead of home use. There are no music players, video players, document editors and so on in Ubuntu server but powerful tools to start almost all types of servers and keep them running in good health. A server operating system although of no use to the regular home user is blood line for an enterprise. In between these two extremes lies a set of people for whom both the normal functionality as well as server functionality is needed. Such users would include those hobbyists who want to setup a home based server for their

files. Yet another category of users who are in need of servers but do not have the production requirements is the developer group. Within this group you might find student studying in colleges or schools trying to run a small web application they created or website owners who want to test the most current version of the CMS used at their website. For such a group tangled by the requirements of both home and server side products, Ubuntu can help achieve the salvation.

With Ubuntu you can set up a server as easily as you would setup any other machine. While some projects prefer that you compile the project from source only, others not so strict can be installed with a much greater ease using the very friendly apt-get or synaptic. We would not bring Ubuntu Software Centre into the picture. If you belong to the species the members of would have already started feeling troubled and nostalgic, let us tell you that while Ubuntu Software Centre is a good place to find all your day to day wonderful software packages, it is best to use synaptic or better still, the apt-get method to install the server software. But before we begin, let us first look at the options.

Type of server software available for Ubuntu

Ubuntu desktop edition, as we have already said does not come with the server software selection. In such a case, you would have the freedom to install the various software for different needs. Let us look into the range and type of servers available for the service. Remember however that every server needs to be configured according to the needs of the machine. While we would have loved to provide you with in detailed description for each server we talk about, it would not be possible for the reason that most server software come with a real big manual. Some of them are so flexible that the manual might be more voluminous than what whole FastTrack could contain.

It is this reason that we suggest the regular home user to install only that which is required. Installing too many server software on a home machine can slow down the system. In case you do not require some functionality, it is best not to install the respective server. Now, let us see the options to tempt you for not following our words.

SSH Server

We tell you, this is one of the most basic servers you would find out there with one of the most useful uses. SSH is the protocol similar to

telnet and can be used to open and run a remote machine's console at your desktop. Almost all Linux machines come with the ability to connect to a remote SSH server. OpenSSH is one of the most well known software for SSH servers. It includes strong encryption, X11 forwarding, port forwarding, agent forwarding and data compression among other features. This package is available simply by the name 'ssh' in the Synaptic package manager.

The files governing the behavior of OpenSSH are `~/.ssh/config` and `/etc/ssh/ssh_config`.

DNS Server

While DNS is something really complicated to understand and almost completely useless for a home user from all viewpoints except the two best excuses to 'experiment' and 'learn', we mention it here anyway. The most popular DNS server for the Linux platform is the BIND server which can be found in the `bind9` package in Ubuntu. This server is one of those which is heavily used at those Linux servers on the Internet which are being utilized as DNS server. It comes with all the functionality needed from a DNS server in general.

The configuration files for BIND are usually found in `/etc/bind` among which `named.conf`, `named.conf.options` and `named.conf.local` are the most important ones.

Mail server

You are not supposed to mistake the server with the client. While evolution is a great email client, it is not a server. It is also worth a mention that a mail server contains of a number of programs which must inter-operate well with each other. As such, the term 'mail server' would not qualify for a single software program as far as completing the list of functionalities is concerned. Unless you are really in need for setting up an email server on your machine, do not install it. It's not a job for a faint hearted one. However, if you are someone who likes to take challenges head-on, we would be happy to tell you the place where you shall find the exact instructions for satisfying your appetite. It would be: <https://help.ubuntu.com/community/MailServer>. While it might not list every software you need to install to get your own email server running with all the functionality involved, a community would be happy to help you.

Database servers

There are some who might not like to call their machine a server. But then at least few must already be aware that even VLC can work as a multimedia server. A database server as such is not something too cool to talk about but can be extremely useful for someone who is either trying to develop his own application (we missed 'web', eh?) or is trying to test out which CMS suits the best. A database server is used in many cases ranging from music catalogs to large scale applications' storage point. There are quite some interesting servers in this category.

- ▶ **MySQL:** If you are a developer or interested in developing almost any type of web application, or even just interested in computing, chances are you have already heard of this immensely popular word. MySQL is used in some of the major companies worldwide. The names would include Yahoo, Google, Amazon, ebay and a few more. The major reasons for using MySQL are speed and availability of different storage engines which can be attached to MySQL at any time. Also, configuring it is quite easy and does not involve much pain. For a developer who loves to carry his laptop around, `/etc/my.cnf`. Of course it takes a whole lot of extra pain than just editing this file for those who want the fully fledged server to run but this is the minimum we could tell you. Look into the manual for more. In case you are a student and are not already using MySQL and are in need of a database which would obey the commands and queries written in your course book, do look over to the next option. We assure you will not be disappointed.
- ▶ **PostgreSQL:** One of the open source databases which stands apart from most others in the free arena. The reason is the standards compliance. PostgreSQL has been designed ground up to remain integrated (unlike MySQL whose functionalities depend on the storage engine in use) and comply to as many SQL standards as possible. While there are a lot of functionalities which are not supported by MySQL, PostgreSQL would not let you down. One of the features which PostgreSQL happily announces is "complete support for foreign keys". Yes, the default engine of MySQL, also known as `myisam` is not in favor of using foreign keys. Moreover, it does not always follow the SQL queries in the way Oracle would. Since most text books are written keeping oracle in mind, it might be a problem for a student who expects MySQL to listen to commands. At times it might be annoying and even frustrating to discover that some basic functionality like the 'check' constraint does not work with MySQL. PostgreSQL on other hand is fine in these regards. Please note that we do not mean to degrade

the reputation of MySQL. Both these master pieces of OSS (MySQL and PostgreSQL) do what they have been designed for ('speed' and 'standard compliance', in that order) and it is completely up to the user to select one. In case you are interested in it already, do get through the manual for configuration details for it is not as easy to configure as MySQL.

- ▶ SQLite: Some do not even call it a database and yet it is found in so many products, including our beloved 'firefox'. Aimed at being small and able to support the most basic features of the databases i.e., providing a way to access tables smartly, this little nifty program gets the job done easily. Its ability to be embedded inside another product is what makes it even more usable. If all you want from a database is to read and write to a couple (or a few more) tables, look no further. There simply is nothing to configure here. Get set go!

There are many other databases available such as firebird, ingres, maxdb, luciddb and so on, but one must go through the supported feature set well before selecting one. Get one which suits the best. Now for those who were looking for the word 'oracle' somewhere in the proximity of the above boundaries, we tell you is compatible to run on Linux but we do not mention it here because of its propriety and closed source nature. Moreover the only free edition available (named as the 'Express edition') from Oracle limits you at a limit of 4 GB for data storage and is not available in the Ubuntu repositories. Please Google oracle for more.

Samba File Server

Samba server is used to create file sharing serves which are compatible with Windows network. So if you have this file on your Linux system residing in your home directory and you would like it to be available to the friends who keep looking at Windows all day, and want to keep it simple for them, we suggest go for the samba dance party. Err, we meant "install Samba server" on your Ubuntu machine. Once you are done with the installation, your friends can do a `\\192.168.1.10\` from their machine. We suggest you install `gadmin-samba` as well, unless you want to work around with `/etc/samba` directory.

File server (FTP)

Files are what the network was created for. The age old daddy of all file transfer protocols ever made still rules them if you bring in ease of use, interoperability and standards in the picture. Not only it keeps things simple,

it also is capable of keeping things secure by asking visitors a password! The two most popular FTP daemons (read services) for Ubuntu are *vsftpd* and *proftpd*. Unless you are really in mood to configure things in the config-file style, we suggest you go for the *proftpd* package and also install the *gadmin-proftpd* package to make sure you have a GUI helper to get things working fast and easy way. Geeks can go for *vsftpd* for it stands for ‘Very Secure FTP Daemon’ and is something Ubuntu recommends.

Proxy server

Squid is something which lives in the water. That is fine for those interested in animal life. For those who want to make sure that people on the network follow the rules set by you when it comes to what to browse and what not to, Squid is synonymous to ‘proxy’. It can be used as a proxy server for blocking unwanted web sites, proving a simpler way to access the web in complicated environment and at times saving bandwidth by using its web cache feature! No matter why you want to use a proxy server, Squid is something you are going to turn to later, if not sooner.

Web Server

Web pages are what make the web sites. Web sites are what make the web and a web server is what serves the web page. Without a web server, there would be no web at all. Linux is one of the most used operating systems as a web server machine and the most popular web server (sometimes it seems like its the only one) is the Apache web server. While apache web server can also be installed on a Windows machine, it enjoys the status of being the most preferred server on a Linux and Mac machines. Apache is unique with its modular architecture where you can enable support for a huge number of functionalities and additional protocols over the web server by adding mods (or plugins). It is easy to enable or disable modules by editing the right configuration file. You can find apache in the Synaptic by name ‘apache2’.

While there is a whole lot of configuration options for any server, and especially web servers, the most important of all for the apache 2 web server would be *httpd.conf* file. On most Linux distributions it can be found in */etc/apache2* directory. However, this file is not the one which is most important to Ubuntu. For Ubuntu, you should get interested in */etc/apache2/apache2.conf* file. That said we believe the comments in the files mentioned above would be good enough to tell you the options about which you would care.

Installing a LAMP Server

LAMP server is a misnomer for it is not one single server. LAMP is actually an acronym for Linux Apache MySQL P-programming languages. You already know Linux and we have told you about the Apache web server and the MySQL database server. Coming to the last part, 'P-Programming Languages', one interesting thing about the P part of LAMP is that it can be replaced by more than one word. All these words are the name of the server side scripting languages. The most common replacement for P in LAMP is 'PHP' with 'PERL' and 'Python' as the other alternatives. Due to the immense popularity of PHP both individually as well as in comparison to Perl and Python, LAMP sometimes is simply called as Linux-Apache-MySQL-PHP.

If you remove the 'L' part (and we mean to say if you remove Linux from the picture), you would also find packages which run on Windows and Mac. They are very predictably named as WAMP and MAMP respectively. However, since we are talking about Ubuntu Linux, WAMP and MAMP do not come into the picture.

If you are in need to install LAMP, the most geeky way is to install them by hand; compile them. For someone who would love to save time, an apt-get is the second best bet. In case you want to keep it simple and silly, Synaptic is the way to go. Simply go to the Synaptic package manager and install Apache 2, MySQL and PHP5. And you must not forget to install the packages which connect them. For example if you have MySQL and PHP5 but do not have php-mysql package, things won't work. While all this is much simpler than anything else, there is still the simplest method to be uncovered.

The simplest method would be to use the command called 'tasksel'. But before you go and run it, let us tell you – its not available with Ubuntu as a default package. The reason you ask for? Well, let us repeat it again – Ubuntu was made for home users. However, as we all know, there is nothing too complicated with installing software when the Linux distro you are using spells U-B-U-N-T-U. So launch a terminal and whisper to it:

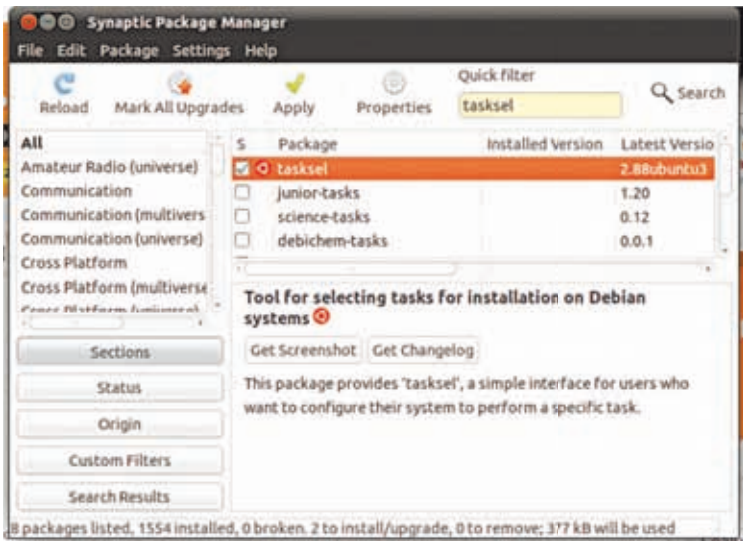
- `sudo apt-get install tasksel`

Once done, run the command

- `sudo tasksel`

on the gnome-terminal and you will have an option to install many packages which require installation of a set of packages and then need you

to configure them. Select from the list 'LAMP Server' and hit OK button (you should use the keyboard, actually). You can also install, from the same screen a few other tasks which actually require you a lot of configuration. Tasksel can be used to install the software set but not to uninstall them. The reason behind this rather-awkward behavior is that tasksel uses apt-get to install the software in a chose package. However, it is possible that a few more software packages installed later start using one of the libraries installed during the task installation. For example, if you install LAMP



Getting Tasksel: Tasksel can also be installed using synaptic

and then install Amarok and configure amarok to use MySQL as a music catalog, chances are that uninstalling LAMP completely after all this will break your Amarok music collection. For this reason, you should apt-get remove the packages manually using best of your judgements.

Once LAMP is installed, you can configure easily the parts of LAMP such as apache2.conf and php.ini to configure each of the packages individually. We assure that you might have understood that installing server on an Ubuntu machine is not a deal big enough to make you bother much. **d**

CHAPTER #7



ADVANCED SYSTEM TWEAKS IN UBUNTU

Get ahead with Ubuntu and do more
with useful tweaks.



ometimes we need a lot more than ‘simplicity’. We need to make things work ‘exactly’ the way

they need to. This might need anything from making the system boot faster to automatically mounting file systems and altering the menus on the top panel. While anything can be controlled by changing the configuration files of the respective software, there still are simpler ways for many other tasks. We have already said that most software configuration files rest somewhere in the `/etc/` directory and have also mentioned some in the name of Apache, openSSH and MySQL. Now we will look into some more which actually govern some important system-wide settings.

Important Configuration files for Ubuntu Linux

/etc/fstab: This file governs which partition will be mounted when the system starts. In case you do not want a partition to be visible to everyone, just remove the respective line for the partition and it will not be available on the system.

/etc/hostname: Your system hostname. It is the same name which you entered while installing the system. In case you want to change it, just edit this file using the ‘`sudo nano /etc/hostname`’ command and reboot the system.

/etc/hosts: The IP address and hostnames of other machines on the network. You can edit it appropriately to be able to use other machines by name rather than by IP addresses. You can also use the file to map the IP address of those websites for which you do not want to wait even a millisecond. Google is one such candidate.

/etc/passwd: This file contains the information about the users existing on the system. If you want to understand the file, look for the Linux password reset trick in the April 2011 issue.

/etc/shadow: This file contains the password hashes of users on the system.

/etc/resolv.conf: In case you want to manually set up the DNS servers, you can simply edit this file. If you followed the steps for network configuration earlier, the file on your system should contain something like:

```
• # Generated by NetworkManager
• nameserver 8.8.8.8
• nameserver 208.67.222.222
• nameserver 8.8.4.4
```

We believe you are able to see the simple pattern in file.

There are a lot of other important files in the `/etc/` folder which would govern much more delicate parts of the functionalities of the OS. It is recommended that you do not try to edit them by hands unless of course, you know perfectly well what they mean and what might get changed by changing them. It is also recommended that before editing, you back up the files. We mention them here anticipating they will not be misused or handled carelessly.

/etc/apt/sources.list: The list of software repositories from where Ubuntu would get its software list and filenames to download later.

/etc/bluetooth/*.conf: The files here determine how the computer behaves with other bluetooth enabled devices. Do not edit them by hand unless utterly needed. A misconfigured set of files might create a lot of troubles.

/etc/init/*.conf: These files contain the configuration of many services which do not run in user mode. They help determine the options which these services use when starting.

/etc/modprobe.d/: Files in this directory determine which all kernel modules will be loaded and which are blacklisted. Kernel modules enable functionalities for the kernel without which a particular hardware or sometimes even a service will not work properly.

/etc/rc*.d/: Files in these directories are responsible for how the system

starts. If you remove or alter files here, the behavior of system during startup with respect to the services and daemons will get changed. It is best not to touch them by hand.

/etc/init.d/: Files in this directory are responsible for bringing up services. They are mostly symbolic links to other files in the `rc*.d` directories but a few are also original files.

More files would get available as you install more software and services. However, the rules remain the same; do not edit if you are not sure. Read the manual before you head on. For more information about a service or a command, never forget to read the man page (they stand for the 'manua' pages which can be read from the shell). To read the man page of a command, type `man <command_name>` on the console. For example, if you want to read the manual of the 'ufw' program, type `man ufw` on the command prompt. Manual pages are the 'F1' for a Linux application. So read them well. They might not be too friendly at once; but once you are used to it, they become immensely helpful.

Installing software offline

Installing software in Ubuntu is a piece of cake. Just launch the Ubuntu software center and type in the name of the software in the search bar; click on 'Install' and you have it. This all seems and sounds so easy. The part we miss is: there is an Internet connection involved. If you do not have an Internet connection, installing software on a Linux machine does not remain easy. In most cases, you cannot simply download a .DEB (or even a .RPM) file and double click to install it! There are a lot of dependencies to be resolved. Unless dependencies are resolved, the software will not behave well. Even its running is under question.

However, it is important to understand how to install software on Ubuntu without an internet connection. We show you the two ways which can get the job done. Both have their pros and cons which we will also talk about while learning about them.

Compiling programs from source code

This is the way preferred by geeks because there is no other way which can give more control over software installations. However, it is also complicated because of the technical details involved. If you have never compiled anything, may be this method is not for you. To follow this method, you must have the source code of the package you want to install. Let us take

the example of compiling php on our computer.

- ▶ Download the source package. In our case, we need to go to <http://www.php.net/downloads.php> and select the package we want. We assume the php-5.3.6.tar.bz2 package is being used for the installation.

- ▶ Now open a shell and go to the directory where the file gets downloaded

- `cd ~/Downloads/`

- ▶ Then unpack the file using the tar command. This will create the required files in the directory php-5.3.6 and come back to prompt.

- `tar -xvf php-5.3.6.tar.bz2`

- ▶ Now change the directory to php-5.3.6 by using the cd command. Now run the command

- `./configure --help`

This will list down the options which the software supports. You can add as many parameters as you want from the list (you should understand what they mean). Once you have done that, run the ./configure script again with the parameters you have selected before. Let us assume that we want to enable support for PostgreSQL. Since ./configure --help says:

- `--disable-ipv6` Disable IPv6 support

So we will run the command:

- `./configure --disable-ipv6`

- ▶ The command checks whether the system meets the requirements or not. In the end it throws the error:

- `configure: error: xml2-config not found. Please check your libxml2 installation.`

Now, we have a problem. This command is a part of the package libxml2-dev. So we have to install that first. Only then shall we be able to compile

the php program. Now, this is the most annoying part. The configure script does not report all errors in one go but stops at the first one. If you resolve the first one and then find another, it becomes much difficult.

A bigger problem comes when you are trying to install a dependency (in this case libxml2-dev) and you find that it too needs some other package. Now, think of the situation when you have multiple dependencies (say 7) and each dependency further relies on 4 other dependencies. SO there are in total of 28 dependencies which you need to install, one after another. Since, we are talking about installing software on a machine with no Internet connection, and it is possible that you might be using the nearest cyber cafe or a friend's computer to download packages (searching the right version is another problem rooted within this all), it will easily drive you mad. However, for sake of simplicity, let us consider for the time being that we have to deal with only one single dependency – libxml2-dev and that we have installed it.

Now run the command again and you should have a long output and the end of it should say “Thank you for using PHP.”

This indicates that the PHP package is ready to be installed.

- ▶ At this point of time, it has been verified that PHP can be installed on the system if the actual source code has no errors (and it should not have any because the package was most probably tested by the developers). The only job the configure script does is to check whether the system satisfies the requirements and create other files called ‘makefiles’. A makefile is once again a type of configuration file. It contains instructions for the compiler to follow, basically telling it what all has to be considered while compiling. Now we have to actually compile the package. So call the program ‘make’ by typing the same at a command line. This will call the compiler for every file individually and compile the whole package.

Make should produce a lot of output and then get ready with the command line once again. Do notice the last few lines though. If they mention that there was an error then you should ask the community for help (make errors depend on the project source and only the project developers can help). If make did not report an error, its time to finally install the package. Just say ‘sudo make install’ at the command line.

The reason we use ‘sudo’ is that a software installation might need to copy some files to the directories which are available to the root user only. Using ‘sudo’ will elevate the privileges and make sure that the files get copied to the location they should.

In some cases, such as PHP itself, it might suggest you to run either ‘make test’ or ‘make check’. This action would actually run an automatic test trying to determine whether everything was compiled as expected or were there some errors. Do so before running ‘sudo make install’. In case you find some tests failing, you should use the best of your judgment powers to determine whether or not the software should be installed.

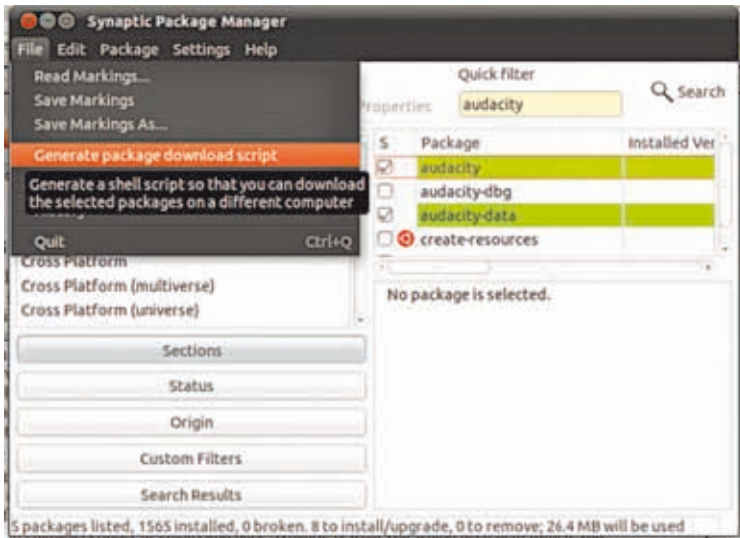
Your software should be installed after ‘sudo make install’. But wait, do not delete the php-5.3.6 directory. If later on, you want to remove PHP from the machine, you can go back in to the same directory and run ‘sudo make uninstall’ and the software would get removed from your system in an easy way. Otherwise, removing files individually is a real tough challenge, and one with no benefits in almost all cases.

While all this might seem quite easy, the most difficult part of installing software by compilation is where you have to resolve dependencies. It is this part which makes the task challenging and geeky. Keeping that part aside, there is almost nothing to be afraid of when it comes to installing software by compilation.

Using Synaptic for offline package installation

We have already shown you how to install software on Ubuntu without an Internet connection by compiling software on it. However we believe we have also demonstrated that resolving dependencies and installing them before the software in need is a task challenging enough to make those tremble who use pacemakers to keep their heart running. It was this reason that package management was invented. Package managers like YUM and APT were created to keep track of what was installed and when; which software depends on what and where to find one if a package is needed. Package managers were created to be able to install pre-compiled software packaged on computers and keep track of them. Since installing software by source also takes a lot of time depending on the machine configuration and the amount of code, package management came up as a better solution. It was because of such inventions that Ubuntu enjoys the ‘search-click-go’ style for software installation.

However, this style involves heavy use of Internet, which for some is still a luxury, leave alone the matters of unlimited downloads and high speeds. If you think that it is going to be very tough, you are mistaken. It is going to be a little different but not too tough. Well, to begin with, ask yourself – how does someone install a software on Windows if he does not have it? In



Automate: Use Synaptic to generate a package download script

99 out of 100 cases, the answer would be to download the software from the Internet and run the set up. Offline software installation for Ubuntu is not much different either. Although Ubuntu Software Center is what a user would prefer and the command line `apt-get` is the friend of the one who loves to see everything happening in characters rather in graphs and bars, Synaptic is what you would need help from if you were to look for a method to install software without an Internet connection on the machine. To be able to do so, follow the following steps:

- ▶ Launch Synaptic Package Manager. This can be done by typing “synaptic” in unity, and by launching “Synaptic Package Manager” from the System Administration menu in Gnome.
- ▶ Once Synaptic is up and running (it takes some time to rebuild its search index), search for the packages which you want to install and mark them for installation. Synaptic might also ask for installation of other packages as dependencies. Confirm them. Do not press the ‘Apply’ button. In this example, we will try to install ‘audacity’ which does not come with Ubuntu in the default package.
- ▶ Go to the ‘File’ menu on Synaptic window and click on the ‘Generate

Package Download script”. This will open a new window asking you to save your file. The file is a text file which can be executed as a shell script on Linux machines. If you do not intend to use the generated script file on another Linux machine, you can very well save it with a .txt extension. In case you want to use it on another Linux machine, you can use the .sh extension. The point here is to be able to view contents if you have to. You can use any extension as long as you are able to do a ‘open with...’ on the file and open it with a text editor. For the sake of this example, we will use the name ‘download-audacity-package.sh’ and save it in the home directory.

- ▶ If you run this script on a Linux machine with an Internet connection, it will download the required set of packages. However, let us assume that we are using a Windows based machine and still want to use the generated file. To understand the procedure, we will tell you a few things about the generated script file. The first thing to be understood is: the file is basically a shell script file. All it does is to call the ‘wget’ program to download the required packages. Wget is a command line program which can be used to perform HTTP downloads. The generated script file simply calls the wget program with the address of the packages. If you open the script file with any text editor, you shall see the commands and of course, the URLs of the packages to be downloaded.
- ▶ Now you know the trick. All you have to do is to go to the nearest cyber cafe, or a friend’s home with an Internet connection and download the packages whose URLs are mentioned in the script file. For example, if a line says

```
• wget -c http://us.archive.ubuntu.com/ubuntu/pool/  
universe/a/audacity/audacity-data _ 1.3.13-3ubuntu1 _ all.deb
```

then you should download using the link:

```
• http://us.archive.ubuntu.com/ubuntu/pool/universe/a/  
audacity/audacity-data _ 1.3.13-3ubuntu1 _ all.deb
```

- ▶ Once you have downloaded the packages, all you have to do is to save them all in the same directory and put them on the same machine (the one with no Internet connection) and launch Synaptic again.
- ▶ Now, go to File → Add Downloaded Packages. This will open a new

window where you have to select that directory where you have placed all your .DEB files. Remember that you cannot select individual .DEB files in the selection window (its for selection of directory, not files). Synaptic will automatically install all of them and there you have it! The software is installed.

Optionally you can also use the command:

- `sudo dpkg -i *.deb`

in the directory where you saved all the .deb files.

Now if you do not have an updated package list (for example, if you wanted to have software package list from the multiverse repository, but do not have the multiverse software list), you might not be able to enjoy the full list of software which Ubuntu can get for you. There, however is a way out! You can actually get the updated list of software and the list of dependencies from the ubuntu website and add them to the list of packages Synaptic shows. You can then use the same method of using a generated package download script (with some tweak) to download the packages offline and install them later on the machine. To be able to enjoy the complete set of software which Ubuntu has to offer, follow the following steps (for Natty Narwhal):

▶ First run the following command on the terminal:

- `mkdir -p ~/dists/natty/`

This will create the directory 'dist' in your home directory and then create the folder 'natty' inside it.

▶ Now, go to <http://archive.ubuntu.com/ubuntu/dists/natty/> and download the files named 'Contents-i386.gz', 'Release' and 'Release.gpg' and put them into the ~/dists/natty/ directory.

▶ Next, create the directory named 'multiverse' inside the ~/dists/natty/ directory and then create the directory named 'binary-i386'. Also navigate to: <http://archive.ubuntu.com/ubuntu/dists/natty/multiverse/binary-i386/> and download the files 'Packages.bz2', 'Packages.gz' and 'Release' to ~/dists/natty/multiverse/binary-i386/.

▶ At this point of time, you should be having the files 'Contents-i386.gz', 'Release' and 'Release.gpg' in ~/dists/natty and files 'Packages.bz2',

'Packages.gz' and 'Release' in `~/dists/natty/multiverse/binary-i386/`.

If you want to add more repositories such as 'restricted' to Synaptic installed on your machine, repeat step '3' above with the word 'restricted' replacing the word 'multiverse' everywhere in the line. You can follow the same procedure for other repos like 'main' and 'universe'. In our example, we will consider only 'multiverse' and 'restricted' repositories. Remember that the folder structure of the repository information contained in the folders on the ubuntu server should match that on your hard disk. It is not important to copy the files in directories 'debian-installer' and 'i18n' and so on because they are not used by Synaptic. Note however, that if your machine runs on a 64 bit kernel, you should download files and create folders with the name matching your architecture, i.e. -amd64, instead of -i386. We, here are in an assumption that you are using a 32 bit OS.

After having downloaded the folder structure on <http://archive.ubuntu.com/ubuntu/dists/natty/> with interested directories, launch Synaptic Package Manager and add a new software repository. Simply go to Settings Repositories and click 'Add' button on the 'Other Software' tab. In the APT line, type:

- `deb file:///home/vaibhav natty restricted multiverse`

and hit enter (remember to replace the username from 'vaibhav' to the one you are using). The new repository should show under the list. Now, press the 'reload' button in synaptic to refresh the list of software available. The Synaptic package manager is now ready to get the packages from the new repository in your home folder. Now when you try to generate a package download script, it will include the packages from your disk-based repository. However, the problem is that you do not have any repository! All you have is a repository information! A sample generated script for downloading package files for the fglrx package (found in the restricted repository) would contain the following lines:


- `wget -c file:///home/vaibhav/pool/restricted/f/fglrx-installer/fglrx_8.840-0ubuntu4_i386.deb`
- `wget -c file:///home/vaibhav/pool/restricted/f/fglrx-installer/fglrx-amdcccle_8.840-0ubuntu4_i386.deb`

Now, if you notice at the path, the path does not exist. Do not worry. Half

the work is done. We already have the package list. What is required now is to change the file paths to genuine URLs containing the files. So you can use any text editor with the ‘search-and-replace’ functionality and change the “file:///home/vaibhav” part to “<http://archive.ubuntu.com/ubuntu>” and all URLs will become valid. In case you do not have a text editor with search-and-replace functionality installed, open the terminal, do a ‘cd’ to the location where you have stored the download script and run the following command:

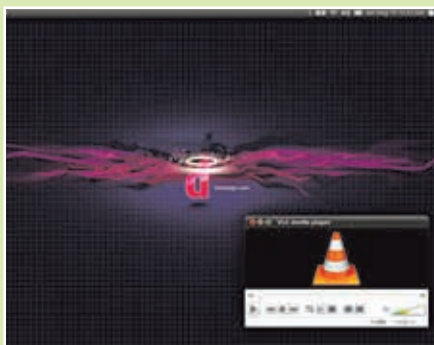
```
• sed -i 's#file:///home/vaibhav#http://archive.ubuntu.com/  
ubuntu#' download_package.sh
```

In the above command, replace the text /home/vaibhav with the path where you created the offline repository. In case you have been following the guide as is written, you would have to replace ‘vaibhav’ with your username. Also change the filename from download_package.sh to the one which you gave to your download script. Now follow the instructions for installing packages offline, i.e. go to a computer with Internet access and download packages with mentioned URLs in the download script, save the *.DEB files in same directory and then use synaptic to install the packages.

We know it might appear like a lot of things to remember when you read the instructions but be assured, if you successfully do it twice, you would be happy to do it the third time. 



**Find a sachet of
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Miracle Masala free inside.
The Foolproof way to tasty,
healthy fried rice in under
5 minutes**



THE DIGIT OS

Yes, we have a customised OS for our community. The distro is on this month's DVD. Try it and get the Digit identity for your PC.



At Digit we love software as much as you do. This is one of the reasons why we

provide you with India's largest collection of software. We also have been providing you with many Linux distributions in the past. Ranging from ones like Backtrack to satisfy the geek in you to friendly ones to caress you, such as Ubuntu, we have tried to provide what you would have wanted. Digit OS is an attempt to satisfy the hunger of the regular user who wants a quick, easy and efficient solution to problems when they come up! Before you start wondering how it is made, we give you a hint about it: we are mentioning about the Digit OS in Ubuntu 11.04 FastTrack. To our expectation, you would have already got the answer about it now. It is based on Ubuntu 11.04, Natty Narwhal.

What's different from Ubuntu

We wanted to give out Ubuntu 11.04 and then a few things came in our mind and we thought about taking the pain of customize it. Ubuntu is many matters is thought to be self complete. It stands apart from the crowd of Linux operating systems out there because of the ease of use it provides. One of the best things about Ubuntu is its 'live booting' capability. While others too have it, Ubuntu fans would say "we just love the way Ubuntu does it".

The live boot capability is really handy in case you are someone who keeps roaming around. You can configure your USB drive to boot with Ubuntu and go to your friend's home who hesitates allowing you to use his PC and always have the excuse board ready, saying 'Windows got corrupted, dude'. It is also the saviour for cases when your last great experiment towards the ultimate discovery of Windows behaviour gave you the unwanted, yet anticipated result of a non bootable system. You could easily use Ubuntu to boot into such a system and do a backup of the data which otherwise might get lost.

Ubuntu is also a nice method to get to create a presentation quickly when you have no time and you discover the fact that MS Word was not installed. There are a lot other uses of this fantastic operating system if it is not already being used as the primary operating system on one's machines. But what does an average guy need? Some Facebook, twitter and Gmail, some music, occasional videos, chitchat with friends, an easy way to create, edit, scan and print documents and so on. The list is not exhausting for most.

There however are those who belong to the higher excitement and requirement levels. Someone might be in need of an audio editor or a video editor. Someone might need a development environment, some for web applications, some for system programming, some for fun and some, just to check whether the code he copied from his friend runs before he gets it to the lecturer. However, the population density of people with specific needs is much lesser than those who just want to use a computer for the sake of using it. For this reason, we have added a few little programs, which we believe you will appreciate in Digit OS as an addition to Ubuntu. They are free software from either the main or the universe repositories. The three new software packages we have added are:

GIMP: GNU Image Manipulation Program has with time, established itself as the most powerful program in the Linux world for photo editing. In past when the GIMP was being developed with full speed (it is stil very much being developed but there are no new features coming in), it has been compared with the Adobe Photoshop. It has a large set of functionalities for satisfying the creative part of you. Although the interface can be said messy by someone who is used to a clean desktop and does not like three windows belonging to the same application, confusing him / her for what is where. Despite the interface, GIMP happens to be one of the most favourite ones for those who do not want to spend money on large software packages but want some decent amount of picture editing capabilities. We add

it to Digit OS to make sure you do not have to worry when you want to do some editing to your pictures, whether it be simple annotations or creating a masterpiece out of the average camera shot.

Chromium Browser: It was back in the days of 2004 when the first product came into market which could give some real challenge to the Internet Explorer after its market dominance every since. Slowly it became so popular that today it holds the record of the most downloaded software on the planet. Yes, we are talking about the Mozilla Firefox. This browser gained immense popularity in the old days for its speed and tabbed browsing experience. Compliance to standards made it gain a lot of attention in developer world, forcing the Internet Explorer team to rethink about their browser design. With a lot more optional features being poured into the browser in the name of add-ons, Firefox soon became widely popular and one of the most successful open source projects on the internet.

When Firefox was at the top, Google released the Chrome browser. It was based on the Chromium browser and is almost identical. Google Chrome is a closed source version with a few minor changes into the Chromium browser. Chromium uses a process per tab model to spawn a separate process for every tab. This keeps the overall experience faster. Based on the sandboxing techniques used in the browser, it keeps other tabs safe when some plug-in crashes or for some other reason a tab stops responding. This made chrome (or chromium) a new favourite. The simplistic looks which were achieved by removing the menu bar and bringing everything under one menu, using the title bar space for keeping tabs, placing the back & forward buttons on the left of the address bar and merging the address bar with a search bar made it very useful for all types of devices. Speed and simplicity as usual won over the hearts of the users and is one of the fastest growing browsers on the planet. There are a lot of users who would like to use Google Chrome on their Ubuntu machines. It is for such users we provide the open source equivalent – Chromium. You would not find any difference in the functionality or speed, save the icon colours, which too is pretty.

VLC Media player: So you want a system which plays the MP3 collection you have on disk and allows you to complete the presentation on your External HDD which you left over on your office machine only to find that Office is not starting up now; and there is no time to correct the problems.

Entertainment is an integral part of our everyday life. We want to watch videos for fun and listen to music while we are working. Ubuntu does come with music players but cannot play all formats of media because of restricted

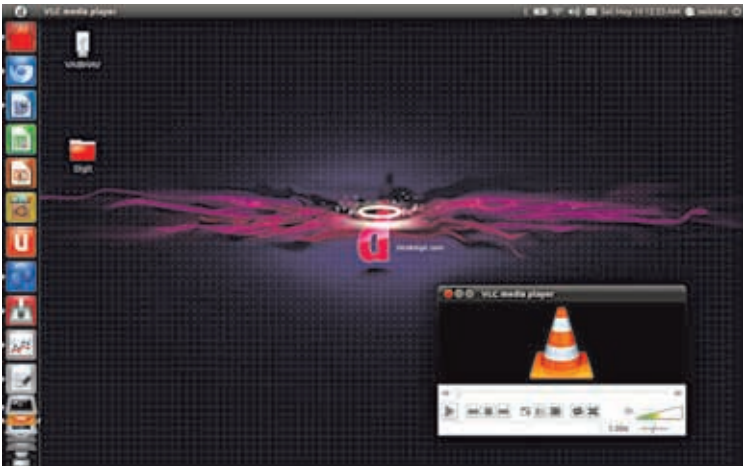
nature of codecs. VLC being an open source project and available in the universe repository is readily available for download. In most cases, after installing a Linux system, one would start scratching Google for answers on “How to play MP3”, “How to install restricted media codecs” and in most cases, he is bound to find VLC, sooner or later. The question now transforms to: “How to install VLC”.

We anticipate this behavior from almost everyone, save those who are far away from the habit of listening to music or watching videos. Considering the fact that the variety of uses a ‘Live’ operating system can be put into (from being used as a companion to find whether its the hardware misbehaving to a full blown security auditing distro), we have put in VLC. Since VLC media player is said to be the one media player which ‘plays everything’ and is open and free software, a multimedia junkie could not have asked for more. We have included VLC to relieve you from doing so. For some people who complain only about multimedia on Linux distributions, this would mean not less than heaven.

Apart from this, we have also added a couple of wallpapers (and have made one of them as default). If you love to read the web for technology related articles, reviews, discussions and more, there is something in for you: we have changed the homepage of both the browsers (Firefox 4 and Chromium Browser) to your favorite technology website: www.thinkdigit.com. If you are a forum user on <http://www.thinkdigit.com/forum/>, you will find yourself just 1 click away from your favorite discussion board. In case, you have the desire to change them, well you can do that easily from the respective setting windows of the browsers. We have also changed the icon theme of Ubuntu to make you feel a little closer to us and hope you will like it.

How we built it

Ubuntu community is one of the largest open source communities on the planet. Members create programs and discover new tricks and they do so from every part of the world. There are programs and techniques which can be used to create customized versions of Ubuntu Linux. If you remember, we just said that Digit OS is meant for the regular user. But we acknowledge and respect the fact that not everyone is just a regular user. There are users who are heavily into 3D modelling. Some use Linux as a database server, some as a web server and then there are so many more type of server uses for Ubuntu. Some want to use a Linux system for development; C, C++, Java, PHP, Ruby and Python are some of the languages which are widely



Try it: The Digit OS desktop (in Unity) with VLC media player on it

in use in today's world and Ubuntu happens to happily support all of them. There are several other uses one can put Ubuntu to; after all it belongs to a very versatile family of operating systems. While we have packed up Digit OS for the regular user with basic computing needs, there are reasons for everyone to extend their wishes.

One of the most well known software available for customizing Ubuntu is 'Remastersys'. This extraordinary piece of work can be used to backup your Ubuntu installation. Yes, you read it right – it backs up your installation. So what do we mean to say? As a matter of fact, Remastersys can be used to create an ISO image out of your current installation. The resulting ISO image would have all the software and the settings in the live environment which you had at the time of ISO creation. This is something which makes 'Remastersys' the first choice for anyone who looks forward to create his own edition of Ubuntu packed with exactly the software he needs or likes to have anywhere he goes. For an artist, this might include GIMP. The one who loves to create a new ringtone from any song he finds, audacity should be included no matter what. Someone with needs of network monitoring would love to include wireshark and nmap with his own version of Ubuntu. As we said, the list is quite long and can extend to infinity. Remastersys can help you include all these software into your own version of Ubuntu which you would then be able to carry around or share with friends of similar tastes.

Using Remastersys is quite simple: just add a new software repo to the list (the same old method of adding a new repository by using the Settings – Repositories menu of Synaptic Package Manager) and refresh the package list. Once done, search for it and install it. Although this is simple and worked well for the Ubuntu 10.10 version, we had quite some problems with the new Ubuntu 11.04 Natty Narwhal. The first problem came in when we found that the website did not list out the repository for the new version. When we tried out with the older version, we got what was expected and more: ISOs created with it did not boot, we had kernel panics and non responsive screens, both login screens as well as those completely black in colour. Other remastering software too failed for some reason or the other. It was time we looked into the internals and do it the hard way.

While it is very much recommended that you do not try out the complicated method unless other remastering software fail and you really want to do it, it is always fun to experiment (at your own risk). If you want to remaster Ubuntu, follow the guide at <https://help.ubuntu.com/community/LiveCDCustomization>.

We found a few problems with the guide however. First it is confusing with the various versions' instructions mixed up. Second, since it is not updated for Natty, a few things do not work as expected. One of those was the method to change the live username. While it is mentioned that for version 10.04, we should edit variables in `/etc/casper.conf`, one would think that it should work all the versions released afterwards too. However, that did not happen and we had to change the username by editing the scripts. We present to you the steps in brief:

- ▶ Get the tool needed for customization by running:
 - `sudo aptitude install squashfs-tools genisoimage`
- ▶ If you do not have an internet connection with you, you might use the trick to download the packages offline and install them later on machine.
- ▶ Now create the necessary directories and copy the ISO image file at the appropriate place by running the commands one after another:
 - `mkdir ~/livecdtmp`
 - `mv ubuntu-9.04-desktop-i386.iso ~/livecdtmp`
 - `cd ~/livecdtmp`

Here we are expecting that you have put the ISO image in the home directory.

- ▶ Now, mount the ISO image and copy its contents to another directory named 'extract-cd'. Do this by running the following commands:

```
• mkdir mnt sudo mount -o loop ubuntu-9.04-desktop-i386.iso mnt
mkdir extract-cd rsync --exclude=/casper/filesystem.squashfs -a mnt/ extract-cd
```

- ▶ Now, extract the live file system (called as the SquashFS file system) by running thie comands:

```
• sudo unsquashfs mnt/casper/filesystem.squashfs
• sudo mv squashfs-root edit
```

- ▶ Now you need to enter the virtual environment (chroot). So let's copy the basic network settings by copying the resolv.conf file:

```
• sudo cp /etc/resolv.conf edit/etc/
```

- ▶ Now, bind the important virtual file systems to the chroot environment (both from inside the chroot jail and outside it):

```
• sudo mount --bind /dev/ edit/dev
• sudo chroot edit
• mount -t proc none /proc
• mount -t sysfs none /sys
• mount -t devpts none /dev/pts
```

- ▶ Now to make sure that the HOME variable and the various Locale settings do not create problems within the chroot, set them to appropriate values:

```
• export HOME=/root
• export LC _ALL=C
```

- ▶ One of the major reasons for remastering is to add new software. Run the following commands to make sure that you will be able to update and install new software and that things are safe when you do so:

```
• dbus-uuidgen > /var/lib/dbus/machine-id
• dpkg-divert --local --rename --add /sbin/initctl
• ln -s /bin/true /sbin/initctl
```

- ▶ Now you can use the apt-get install command to install all those packages you want to. Remember that you cannot use synaptic or Ubuntu Software Center here. They are not available.

- ▶ Now, you can copy any background files into `/usr/share/backgrounds`. If you want them to appear them in the list of wallpapers, you can edit the file `/usr/share/gnome-background-properties/ubuntu-wallpapers.xml`. If you are doing so, use the ‘nano’ command line editor. It’s best not to use a text editor from the parent working environment. You can also edit the `/usr/share/gconf/defaults/16_ubuntu-wallpapers` file to change the default wallpaper.
- ▶ Now run `sudo nano edit/usr/share/initramfs-tools/scripts/casper` if you want to edit the live cd username. Do so from outside the chroot jail. It should be set to ‘casper’ change that to something you want. Be careful though. Do not edit anything you do not understand. You might mess up.
- ▶ In case you have installed anything which would have added modules to the kernel, you need to rebuild the initramfs image. Do so by exiting the chroot and rebuilding the initramfs:

- `sudo chroot edit`
- `mkinitramfs -o /initrd.lz 2.6.38-8-generic`

Remember, the version above is for the Ubuntu Natty. If you are using some other Linux kernel for the ISO, the same kernel version should be used above.

- ▶ Now exit the chroot (type ‘exit’ and hit enter) and move the resulting ramfs image to the right directory where it will be available when booting:

- `exit`
- `mv edit/initrd.lz extract-cd/casper/`

- ▶ Now you should remove the machine id file so that the system may become reusable (should be done from inside the chroot jail – `sudo chroot edit`):

- `rm /var/lib/dbus/machine-id`

- ▶ Also undo the diversion which we did earlier for package installation:

- `rm /sbin/initctl`
- `dpkg-divert --rename --remove /sbin/initctl`

- ▶ Now, unmount the virtual file systems which were mounted:

- `umount /proc || umount -lf /proc`

- `umount /sys`
- `umount /dev/pts`
- `exit`
- `sudo umount edit/dev`

► Now reassemble the (casper) file system which we extracted. So now, regenerate the manifest. Do so by using these commands.

- `chmod +w extract-cd/casper/filesystem.manifest`
- `sudo chroot edit dpkg-query -W --showformat='${Package} ${Version}\n' > extract-cd/casper/filesystem.manifest`
- `sudo cp extract-cd/casper/filesystem.manifest extract-cd/casper/filesystem.manifest-desktop`
- `sudo sed -i '/ubiquity/d' extract-cd/casper/filesystem.manifest-desktop`
- `sudo sed -i '/casper/d' extract-cd/casper/filesystem.manifest-desktop`

► If everything runs well, its time to compress the file system:

- `sudo rm extract-cd/casper/filesystem.squashfs`
- `sudo mksquashfs edit extract-cd/casper/filesystem.squashfs -b 1048576`

► Now, update the filesystem.size file:

- `printf $(sudo du -sx --block-size=1 edit | cut -f1) > extract-cd/casper/filesystem.size`

If you find a message saying 'Access denied', change the permission of the file to be writable:

- `chmod +w extract-cd/casper/filesystem.size`

► If you want, you can set an image name:

- `sudo nano extract-cd/README.diskdefines`

► Now, update the md5sums so that CD check does not fail:

- `cd extract-cd`
- `sudo rm md5sum.txt`
- `find -type f -print0 | sudo xargs -0 md5sum | grep -v iso-linux/boot.cat | sudo tee md5sum.txt`

► Now, it's finally the time to create the ISO image which would be bootable:


```
• sudo mkisofs -D -r -V "$IMAGE_NAME" -cache-inodes -J -l
-b isolinux/isolinux.bin -c isolinux/boot.cat -no-emul-boot
-boot-load-size 4 -boot-info-table -o ../ubuntu-11.04.1-
desktop-i386-remaster.iso .
```

Do not omit the last dot. It is not a full stop but a part of the command.

► Now, your ISO would be ready. It is best to use VirtualBox (which too is available in Synaptic) and test the ISO before testing it on the real machine.

In case you are in need to copy some software settings, you can copy the configuration files in your home directory of the parent system to the /etc/skel/ directory of the chroot environment copy before the step where you pack the casper file system. This should be edit/etc/skel/ directory when you are in ~/livedttmp. This might include some fonts and software preferences.

We believe you liked the procedure and will follow it (do not try things if you don't understand everything, or are not ready to start over again) to create your own distro which contains all the software you need whenever you boot it. However, sometimes if you do things which you are not fully aware of, things might break and hit hard on your head. So be ready for that too and be careful.

An experiment apart, Ubuntu is a great operating system with loads of features to help you out and lots of software available for you when you need it. Based on Ubuntu 11.04 (Natty Narwhal), we have created the Digit OS especially for the Digit readers and have been cautious enough to take care about the needs of an average Digit reader and we hope and believe that you will like it. 

[illegible]



Ching's Secret

Instant, Hakka & Pad Thai Noodles,
Soups, Sauces & Miracle Masala

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